

Report Number: 214-TRC-06-001

**Safety Compliance Testing For FMVSS 214**

**Side Impact Protection**

**Indicant**

**General Motors De Mexico  
2006 Chevrolet HHR MPV**

**NHTSA Number: C60106**

**Transportation Research Center Inc.**

**10820 State Route 347**

**P. O. Box B-67**

**East Liberty, OH 43319**



**Test Date: March 20, 2006**

**Final Report: March 31, 2006**

**U. S. Department Of Transportation  
National Highway Traffic Safety Administration**

**Enforcement**

**Office of Vehicle Safety Compliance**

**400 Seventh Street, S. W.**

**Room No. 6111 (NVS-220)**

**Washington, DC 20590**

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15. Supplemental Notes																																	
16. Abstract <p>This 56/28 km/h 90° Impact (Moving Deformable Barrier) Compliance Test was conducted on the subject vehicle, a 2006 Chevrolet HHR MPV in accordance with the specifications of the Office of Vehicle Safety Compliance Test Procedure No. TP-214D-06 (except the test was conducted 8 km/h (5 mph) faster than the standard specifies) to determine FMVSS 214 Side Impact Protection compliance. This test was conducted by Transportation Research Center Inc. in East Liberty, Ohio, on March 20, 2006.</p> <p>The impact velocity of the Moving Deformable Barrier (MDB) was 62.3 km/h, and the ambient temperature at the struck (driver) side of the target vehicle at the time of impact was 21° C. The target vehicle's post-test maximum crush was 208 mm at Level 3.</p> <p>The test or target vehicle's performance is given below:</p> <table border="0"> <thead> <tr> <th></th> <th><u>Front SID HIII</u></th> <th></th> <th><u>Rear SID HIII</u></th> <th></th> </tr> </thead> <tbody> <tr> <td>Left Upper Rib Acceleration:</td> <td><u>39.7</u></td> <td>g's</td> <td><u>33.8</u></td> <td>g's</td> </tr> <tr> <td>Left Lower Rib Acceleration:</td> <td><u>49.4</u></td> <td>g's</td> <td><u>37.7</u></td> <td>g's</td> </tr> <tr> <td>Lower Spine Acceleration:</td> <td><u>48.6</u></td> <td>g's</td> <td><u>54.9</u></td> <td>g's</td> </tr> <tr> <td>Thoracic Trauma Index, (TTI):</td> <td><u>49.0</u></td> <td>g's</td> <td><u>46.3</u></td> <td>g's</td> </tr> <tr> <td>Pelvis Acceleration (PEV):</td> <td><u>70.4</u></td> <td>g's</td> <td><u>79.8</u></td> <td>g's</td> </tr> </tbody> </table> <p>The two doors on the struck side of the vehicle did not separate from the body at the hinges or latches and the opposite doors did not open during side impact event.</p>					<u>Front SID HIII</u>		<u>Rear SID HIII</u>		Left Upper Rib Acceleration:	<u>39.7</u>	g's	<u>33.8</u>	g's	Left Lower Rib Acceleration:	<u>49.4</u>	g's	<u>37.7</u>	g's	Lower Spine Acceleration:	<u>48.6</u>	g's	<u>54.9</u>	g's	Thoracic Trauma Index, (TTI):	<u>49.0</u>	g's	<u>46.3</u>	g's	Pelvis Acceleration (PEV):	<u>70.4</u>	g's	<u>79.8</u>	g's
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## Section 1

### Purpose and Test Procedure

This side impact test is part of the FMVSS 214 Side Impact Protection Compliance Test Program sponsored by the National Highway Traffic Safety Administration (NHTSA) under Contract No. DTNH22-02-D11114. The purpose of this test was to evaluate side impact protection in a 2006 Chevrolet HHR MPV. The test was conducted in accordance with the Office of Vehicle Safety Compliance's Laboratory Test Procedure (TP-214D-06, dated July 2001) (except the test was conducted 8 km/h (5 mph) faster than the standard specifies).

## Section 2

### Summary of Side Impact Test

A 2006 Chevrolet HHR MPV was impacted on the driver side by a Moving Deformable Barrier (MDB) which was moving forward in a 27° crabbed position to the monorail at a velocity of 62.3 km/h (38.7 mph). The target vehicle was stationary and was positioned at an angle of 63° to the line of forward motion. The side impact test was conducted by Transportation Research Center Inc. in East Liberty, Ohio on March 20, 2006. Pre-test and post-test photographs of the test vehicle, the moving deformable barrier (MDB), and the side impact dummies (SID HIIIs) are included in Appendix A.

Two restrained Side Impact Dummies (SID HIIIs) were placed in the driver (Pos. #1) and left rear (Pos. #4) designated seating positions according to the instructions specified in the OVSC Side Impact Laboratory Test Procedure (TP-214D-06, dated July 2001). Both SID HIII dummies were certified prior to this test. The side impact test was documented by one real-time camera and 9 high-speed cameras. Camera locations and other pertinent camera information are included in this report.

The SID HIIIs were instrumented with the following accelerometers:

1. Head Center of Gravity triaxial and redundant accelerometer (X, Y, and Z-directions)
2. Upper Neck Force and Moment load cells (X, Y, and Z-directions)
3. Left Upper Rib (LUR) uniaxial and redundant accelerometer (Y-direction)
4. Left Lower Rib (LLR) uniaxial and redundant accelerometer (Y-direction)
5. Lower Thoracic Spine (T<sub>12</sub>) uniaxial and redundant accelerometer (Y-direction)
6. Pelvic (PEV) section uniaxial and redundant accelerometer (Y-direction)

A summary of the side impact dummy (SID HIII) configuration and verification test data can be found in Appendix C. A total of 42 channels of data were recorded. Appendix B contains the vehicle, MDB, and dummy response data traces.

The following tables summarize the results of the test.

Injury Criteria	Front SID	Rear SID
TTI (g)	49.0	46.3
PEV (g)	70.4	79.8

### Data Acquisition Explanations

The vehicle right side sill at front seat Z-axis acceleration data channel, 16SILBFR0000ACZA, exceeded full-scale at approximately 21 milliseconds and recorded no useful data after that. The velocity, displacement, and resultant were also affected.

The vehicle left mid A-post Y-axis acceleration data channel, 11APILMI0000ACYA, exceeded full-scale at approximately 22 milliseconds and recorded no useful data after that. The velocity was also affected.

Section 3

Summary of Test Results

## Data Sheet 1

### General Test Vehicle Parameter Data

#### Test Vehicle Information:

Vehicle Year/Make/Model: 2006 Chevrolet HHR  
Vehicle Body Style/Color: MPV/Blue VIN: 3GND A23D96S589275  
Vehicle NHTSA No.: C60106 Build Date: 12/05  
Engine Data: 4 Cylinders:        CID: 2.2 Liters:        cc  
Placement: X Longitudinal; or - Lateral; or - Horizontal  
Transmission: 5 Speed: X Manual: - Automatic: - Overdrive  
Final Drive: - RWD: X FWD: - Four-Wheel Drive  
Odometer Reading: 6 miles  
Options: X A/C: X Power steering: X Power brakes: X Power windows  
Data From Vehicle's Tire Placard:

Tire Pressure (at capacity)<sup>1</sup> 210 kPa Front: 210 kPa Rear  
Recommended Tire Size: P215/55R16  
Tires on Test Vehicle: P215/55R16 Manufacturer: Firestone, Affinity

#### Vehicle Capacity Data:

Number of Occupants: 2 Front: 3 Rear: - 3rd seat: 5 Total  
Type of Front Seats: - Bucket: - Bench: - Split bench  
Type of Front Seat Back: - Fixed: - Adjustable with - Lever or - Knob  
Vehicle Max. Capacity Loading = 454 kg (A)  
No. of Occupants x 68.04 kg. = 340 kg (B)  
Vehicle Cargo Capacity (A-B) = 114 kg

#### Test Vehicle Delivered Weight With Maximum Fluids:

Left Front	=	<u>395.5</u> kg	Left Rear	=	<u>304.5</u> kg
Right Front	=	<u>399.0</u> kg	Right Rear	=	<u>296.0</u> kg
Total Front	=	<u>794.5</u> kg	Total Rear	=	<u>600.5</u> kg
Front % of Total Weight	=	<u>57.0</u> %	Rear % of Total Weight	=	<u>43.0</u> %
Total Weight	=	<u>1395.0</u> kg			

<sup>1</sup> Tire pressure used in test.

Data Sheet 1 (Continued)

General Test Vehicle Parameter Data

Calculation Of Vehicle's Target Test Weight:

Total Test Vehicle Delivered Weight With Max. Fluids	=	<u>1395.0</u> kg (A)
Maximum Cargo Carrying Capacity of Test Vehicle	=	<u>114.0</u> kg (B)
Weight of Instrumented Side Impact Dummies (2 X <u>84.0</u> kg)	=	<u>168.0</u> kg (C)
Test Vehicle Target Weight:	=	<u>1677.0</u> kg (A+B+C)

Fully Loaded Test Vehicle (UDW + 2 SID HIII(s) + Cargo):

Left Front	=	<u>448.5</u> kg	Left Rear	=	<u>443.0</u> kg
Right Front	=	<u>339.0</u> kg	Right Rear	=	<u>398.0</u> kg
Total Front	=	<u>787.5</u> kg	Total Rear	=	<u>841.0</u> kg
Front % of Total Weight	=	<u>48.4</u> %	Rear % of Total Weight	=	<u>51.6</u> %
Total Weight	=	<u>1628.5</u> kg			

As Tested Weight of Test Vehicle (2 SID HIII(s) + Cargo + Equipment & Instrumentation):

Left Front	=	<u>439.8</u> kg	Left Rear	=	<u>403.6</u> kg
Right Front	=	<u>429.8</u> kg	Right Rear	=	<u>395.2</u> kg
Total Front	=	<u>869.6</u> kg	Total Rear	=	<u>798.8</u> kg
Front % of Total Weight	=	<u>52.1</u> %	Rear % of Total Weight	=	<u>47.9</u> %
Total Weight	=	<u>1668.4</u> kg			

Test Vehicle Attitude (all dimensions in millimeters):

As Delivered		Fully Loaded		Ready For Test	
Right Front	<u>715</u>	Right Front	<u>583</u>	Right Front	<u>686</u>
Left Front	<u>718</u>	Left Front	<u>685</u>	Left Front	<u>690</u>
Right Rear	<u>728</u>	Right Rear	<u>680</u>	Right Rear	<u>688</u>
Left Rear	<u>725</u>	Left Rear	<u>670</u>	Left Rear	<u>685</u>

Data Sheet 1 (Continued)

General Test Vehicle Parameter Data

Test Vehicle Attitude:

	Left Sill Pitch	Right Sill Pitch	Front Bumper L-R Roll	Rear Bumper L-R Roll
As Delivered:	0.0°	-0.3°	0.4°	0.8°
Fully Loaded:	-0.5°	0.8°	-0.5°	-1.2°
As Tested:	0.0°	-0.3°	0.0°	-0.1°
Negative Pitch Angle=	Vehicle front down			
Negative Roll Angle =	Driver side down			

Test Vehicle Wheelbase: 2635 mm

C.G. = 1195 mm rearward of front wheel centerline

Total Vehicle Length:

Right Side - 4380 mm

Left Side = 4380 mm

Centerline = 4490 mm



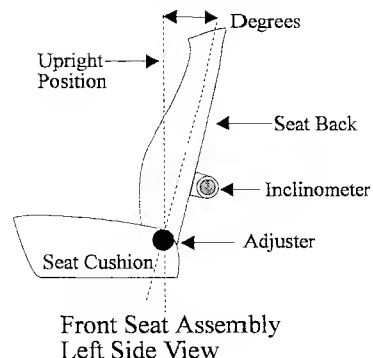
Data Sheet 1 (Continued)

General Test Vehicle Parameter Data

Vehicle: 2006 Chevrolet HHR MPV

NHTSA No.: C60106

Nominal Design Riding Position for adjustable driver and passenger seat backs. Please describe how to position the inclinometer to measure the seat back angle. Include description of the location of the adjustment latch detent, if applicable.



Front Seat Cushion Placement: 140 mm rearward of full forward

Total Length of Fore/Aft Adjustment Travel: 280 mm

Total Number of Adjustment Positions or Detents: N/A

Front Seat Back Adjustment Position: The back was adjusted to the 6.3° at the headrest post

Seat Back Torso Angle: N/A degrees

Second Position Seat Placement: Fixed

Total Length Of Fore/Aft Adjustment Travel: N/A mm

Seat Back Adjustment Position: N/A

Adjustable Steering Column Position: 22°; middle of the geometric range of travel

Window Positions:

Right Front: Closed

Right Rear: Open

Left Front: Closed

Left Rear: Open

Note: Windows will be in closed position on struck side of test vehicle and in open position on opposite side.

Amount of Stoddard Solvent In Fuel Tank:

61 liters (fuel tank usable capacity)

56.4 liters used in test (92% - 94% of fuel tank usable capacity)

Location of Impact Point On Test Vehicle Side To Be Impacted:

Wheelbase = 2635 millimeters

Intended impact point is 378 millimeters rearward of front axle centerline

(which is 940 millimeters forward of the wheelbase midpoint)

Actual Impact Point is 398 millimeters rearward of front axle centerline

Data Sheet 2

Test Vehicle Summary of Results

Vehicle Year/Make/Model: 2006/Chevrolet/HHR

Body Style: MPV

VIN: 3GNDA23D96S589275

NHTSA No.: C60106

Build Date: 12/05

Test Date: 03/20/06

Vehicle Overall Length = 4490 mm

Overall Width = 1750 mm

Vehicle Test Weight (Pre-Test):

Left Front = 439.8 kg      Left Rear = 403.6 kg

Right Front = 429.8 kg      Right Rear = 395.2 kg

Total Front = 869.6 kg      Total Rear = 798.8 kg

Total Weight = 1668.4 kg

Wheelbase = 2635 mm

Longitudinal C.G. From Center Of Front Axle = 1195 mm

Impact Angle With Respect To Impactor = 90 degrees

Impact Point:

Actual Impact Point is 20 mm Right of nominal impact ref. line (Lateral)

Actual Impact Point is 0 mm from nominal impact point (Vertical)

Maximum Exterior Static Crush:

1. Level 1 ( 255 mm above ground) = 5 mm

2. Level 2 ( 610 mm above ground) = 193 mm

3. Level 3 ( 670 mm above ground) = 208 mm

4. Level 4 ( 1025 mm above ground) = 114 mm

5. Level 5 ( 1490 mm above ground) = 0 mm

Maximum Post-Test Intrusion 208 mm

Occupants:

Front Passenger

Rear Passenger

Dummy Identification 055

066

Restraints Used 3-pt seatbelt

3-pt seatbelt

Instrumentation:

Number of Vehicle Data Channels: = 21

Number of Cameras: Onboard = 3      Offboard = 6      Total = 9

### Data Sheet 3

#### Moving Deformable Barrier (MDB) Summary

##### MDB Face Manufacturer And Serial Number:

Cellbond, FG 316

##### Position Of Impactor (MDB) On Monorail:

Crabbed 27° to the left

##### MDB Specifications:

Overall Width of Framework Carriage = 1251 mm

Overall Length of MDB (Incl. honeycomb impact face) = 4014 mm

Wheelbase of Framework Carriage = 2591 mm

Track of Framework Carriage (Front & Rear) = 1881 mm

C.G. Location Rearward of Front Axle = 1112 mm

##### MDB Weight:

Left Front = 492.2 kg      Left Rear = 185.6 kg

Right Front = 288.4 kg      Right Rear = 401.6 kg

Total Front = 780.6 kg      Total Rear = 587.2 kg

Total MDB Weight = 1367.8 kg

Impact Angle (MDB C/L to Target Vehicle C/L) = 90 degrees

Impact Speed = 62.3 km/h

##### Maximum Static Crush of Honeycomb Impact Face:

1. Row A at Center of Bumper Level = 201 millimeters

2. Row B at Top of Bumper Level = 373 millimeters

3. Row C at Mid Level = N/A<sup>1</sup> millimeters

4. Row D at Top of Stack Level = 118 millimeters

##### Instrumentation:

Number of MDB Data Channels = 7

<sup>1</sup> Measurement points not recorded prior to test.

Data Sheet 4

Post-Test Observations

Vehicle: 2006 Chevrolet HHR MPV

NHTSA No.: C60106

Visible Dummy Contact Points:

	<u>Left Front SID IIII</u>	<u>Left Rear SID IIII</u>
Head:	<u>B-Pillar and headrest</u>	<u>C pillar, D ring</u>
Upper Torso:	<u>Door panel</u>	<u>C-pillar, door panel</u>
Lower Torso:	<u>Door panel</u>	<u>Door panel</u>
Left Knee:	<u>Door panel</u>	<u>Door panel</u>
Right Knee:	<u>None</u>	<u>None</u>

Door Opening:

	<u>Left Side</u>	<u>Right Side</u>
Front:	<u>Jammed and latched</u>	<u>Easy</u>
Rear:	<u>Jammed and latched</u>	<u>Easy</u>

MDB Distance From Target Impact Point:

Vertical: 0 mm from target

Horizontal: 20 mm right from target

Arm Rest Locations:

Front: 249 mm below the bottom of the window

Rear: 247 mm below the bottom of the window

Seat Movement:

Front: None

Rear: None

Glazing Damage:

Windshield: None

Window: Driver's side window broken.

Pillar Separation: None

Sill Separation: None

Other Notable Impact Effects:

None

Section 4

Occupant and Vehicle Information

Data Sheet 5

SID IIII Instrumentation Data

Vehicle: 2006 Chevrolet IIHR MPV

NHTSA No.: C60106

Test Number: 060320

Driver Dummy Serial Number: 055

Location		Positive Direction Max. (g)	Time (ms)	Negative Direction Max. (g)	Time (ms)
Head Acceleration (g)					
Longitudinal	X	5.1	279.0	16.1	63.8
Lateral	Y	43.5	53.1	4.3	34.5
Vertical	Z	18.5	67.2	1.6	96.3
Resultant		44.3	53.1		
HIC 36		105			
Head Redundant Acceleration (g)					
Longitudinal	X	5.0	279.0	14.6	89.4
Lateral	Y	44.7	53.1	4.3	34.5
Vertical	Z	18.7	67.2	1.6	96.3
Resultant		45.6	53.1		
Neck Force					
X-Axis Shear		14.0	29.7	697.1	64.3
Y-Axis Shear		345.6	58.0	170.0	34.5
Z-Axis Shear		779.2	64.1	76.2	96.7
Neck Moment					
About X-Axis		26.9	68.8	48.4	51.2
About Y-Axis		43.9	83.3	39.3	63.1
About Z-Axis		44.8	77.2	17.0	310.0
Occipital Cond					
Left Upper Rib Acceleration					
Lateral (P)		39.7	40.6	6.1	94.4
Lateral (R)		39.8	40.6	6.1	94.4
Left Lower Rib Acceleration					
Lateral (P)		49.4	39.4	3.9	108.8
Lateral (R)		50.0	39.4	3.7	108.8

Data Sheet 5 (Continued)

SID HIII Instrumentation Data

Vehicle: 2006 Chevrolet HHR MPV

NHTSA No.: C60106

Test Number: 060320

Left Rear Dummy Serial Number: 055

Location	Positive Direction		Negative Direction	
	Max. (g)	Time (ms)	Max. (g)	Time (ms)
Lower Spine Acceleration				
Lateral (P)	48.6	40.6	5.9	63.8
Lateral (R)	48.2	40.6	6.0	63.7
Pelvis Acceleration				
Lateral (P)	70.4	33.8	14.3	58.7
TTI	49.0			

Positive Direction

Longitudinal: Forward

Lateral: Rightward

Vertical: Downward

Negative Direction

Longitudinal: Rearward

Lateral: Leftward

Vertical: Upward

Data Sheet 5 (Continued)

SID HIII Instrumentation Data

Vehicle: 2006 Chevrolet HHR MPV

NHTSA No.: C60106

Test Number: 060320

Left Rear Dummy Serial Number: 066

Location	Positive Direction		Negative Direction	
	Max. (g)	Time (ms)	Max. (g)	Time (ms)
Head Acceleration (g)				
Longitudinal X	6.9	274.0	26.4	58.6
Lateral Y	96.4	56.0	7.1	83.3
Vertical Z	5.7	53.6	13.1	65.6
Resultant	97.4	56.0		
HIC 36	530			
Head Redundant Acceleration (g)				
Longitudinal X	7.0	274.0	26.0	58.6
Lateral Y	96.6	56.0	6.5	83.3
Vertical Z	5.6	53.6	13.2	66.0
Resultant	97.6	56.0		
Neck Force				
X-Axis Shear	507.3	65.7	169.7	160.8
Y-Axis Shear	100.4	123.8	546.2	67.6
Z-Axis Shear	489.5	53.2	1858.3	65.3
Neck Moment				
About X-Axis	8.7	152.0	63.9	60.3
About Y-Axis	15.8	175.9	20.7	85.8
About Z-Axis	28.4	93.7	13.5	310.0
Occipital Cond				
Left Upper Rib Acceleration				
Lateral (P)	33.8	37.5	3.8	106.2
Lateral (R)	34.6	37.5	4.8	106.2
Left Lower Rib Acceleration				
Lateral (P)	37.7	37.4	5.3	105.0
Lateral (R)	38.6	37.4	5.8	105.6



Data Sheet 5 (Continued)

SID HIII Instrumentation Data

Vehicle: 2006 Chevrolet HHR MPV

NHTSA No.: C60106

Test Number: 060320

Left Rear Dummy Serial Number: 066

Location	Positive Direction		Negative Direction	
	Max. (g)	Time (ms)	Max. (g)	Time (ms)
Lower Spine Acceleration				
Lateral (P)	54.9	47.5	7.2	70.6
Lateral (R)	53.9	47.5	7.4	70.6
Pelvis Acceleration				
Lateral (P)	79.8	43.1	4.4	76.2
TTI	46.3			

Positive Direction

Longitudinal: Forward  
Lateral: Rightward  
Vertical: Downward

Negative Direction

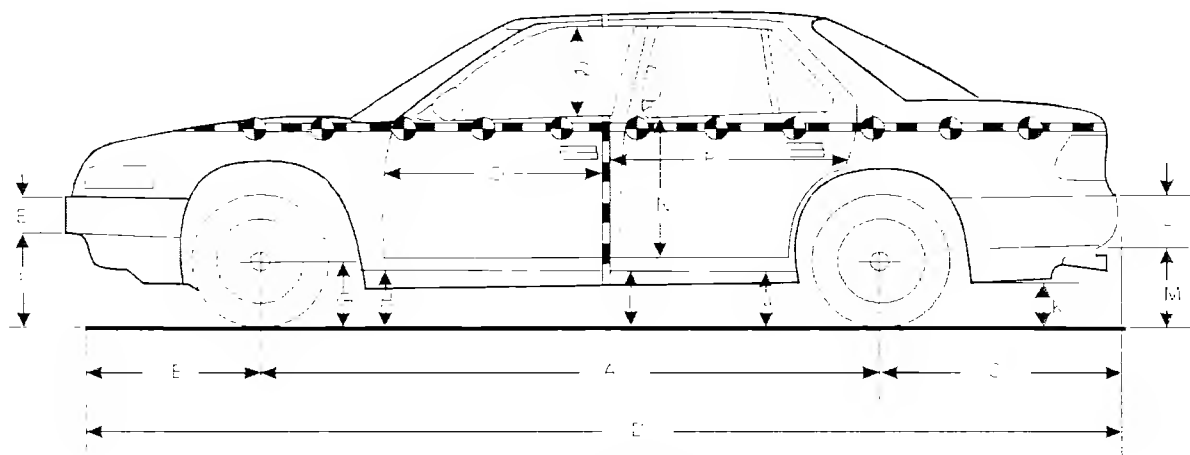
Longitudinal: Rearward  
Lateral: Leftward  
Vertical: Upward

# Data Sheet 6

## Vehicle Pre-Test And Post-Test Measurements

Vehicle: 2006 Chevrolet HHR MPV

NHTSA No.: C60106



Left Side View

Note: All dimensions are in millimeters with tolerance of  $\pm 3$  mm

	Pre-Test (as delivered)	Pre-Test (as tested)	Post-Test (as tested)	Change
A	2635	2635	2634	1
B	895	895	922	-27
C	860	860	900	-40
D	4490	4490	4480	10
E	145	145	145	0
F	400	387	390	-3
G	303	302	302	0
H	240	236	244	-8
I	245	233	246	-13
J1	222	184	202	-18
J2	261	227	256	-29
K	315	270	280	-10
L	155	155	155	0
M	423	369	380	-11
N	790	790	683	107
O	798	798	678	120
P	1181	1181	1068	113
Q	370	370	375	-5
R	4380	4380	4381	-1
S	4380	4380	4363	17
T	1230	1230	1134	96

D = Length at centerline

E and L = Bumper Thickness

R = Right Side Length

S = Left Side Length

T = Width at B-pillar

J1 = To Pinch Weld

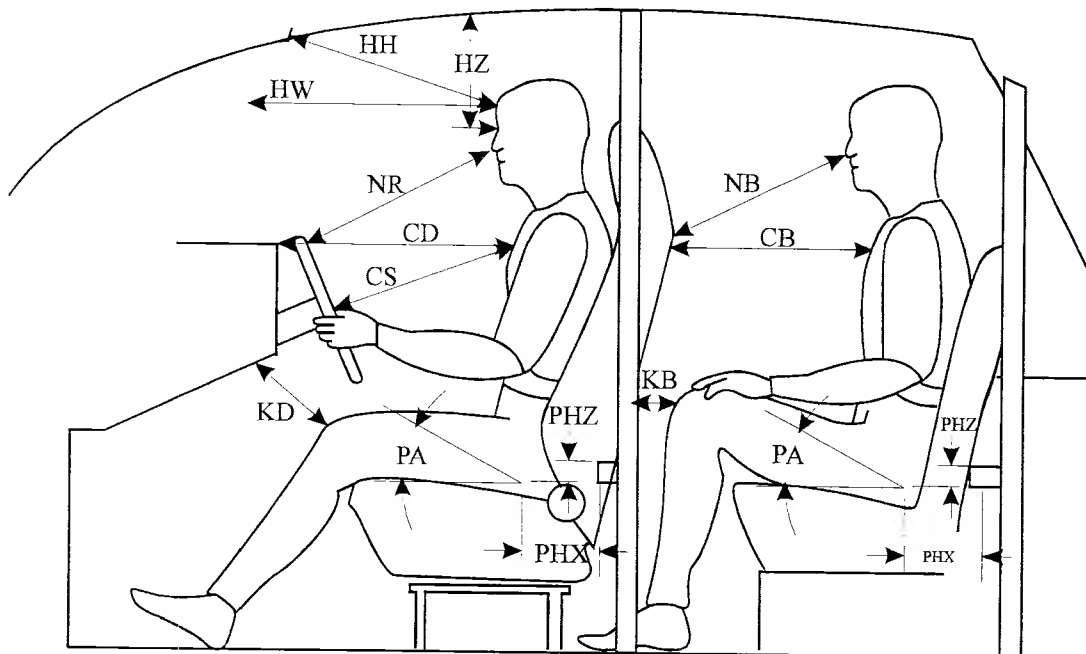
J2 = To Sill

# Data Sheet 7

## SID HIII Longitudinal Clearance Dimensions

Vehicle: 2006 Chevrolet HHR MPV

NHTSA No.: C60106



Left Side View

Note: All measurements are in millimeters with tolerance of  $\pm 3$  mm

Measurement	Driver SID HIII # 055	Left Rear Pass. SID HIII # 066
HH	578	N/A
HW	704	N/A
HZ	195	195
NR/NB	496	585
CD/CB	583	545
CS	390	N/A
KDL(KDA°)/KBL(KBA°)	73/(23.7°)	120/(14.7°)
KDR(KDA°)/KBR(KBA°)	73/(23.7°)	133/(14.7°)
PA°	24.7°	24.6°
PHX	220	190
PHZ	107	774

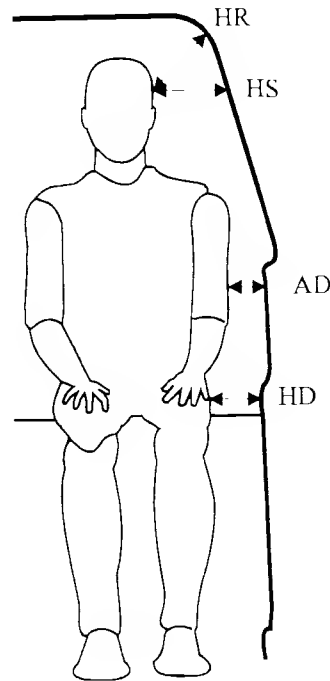
Note: 2-door vehicle shown. Rear dummy PHX and PHZ measurements for 4-door vehicle would use the C-post striker as a reference point.

Data Sheet 8

SID HIII Lateral Clearance Dimensions

Vehicle: 2006 Chevrolet HHR MPV

NHTSA No.: C60106



Note: All measurements are in millimeters with tolerance of  $\pm 3$  mm

Measurement	Driver SID HIII # 055		Left Rear Pass. SID HIII # 066	
HR	265		195	
HS	340		310	
AD*	Lower: 114	Upper: 114	Lower: 101	Upper: 96
HD	124		114	

\* Lower measurement is taken laterally at center of the lower rib accelerometer height from the SID arm segment to the closest part of the vehicle side.

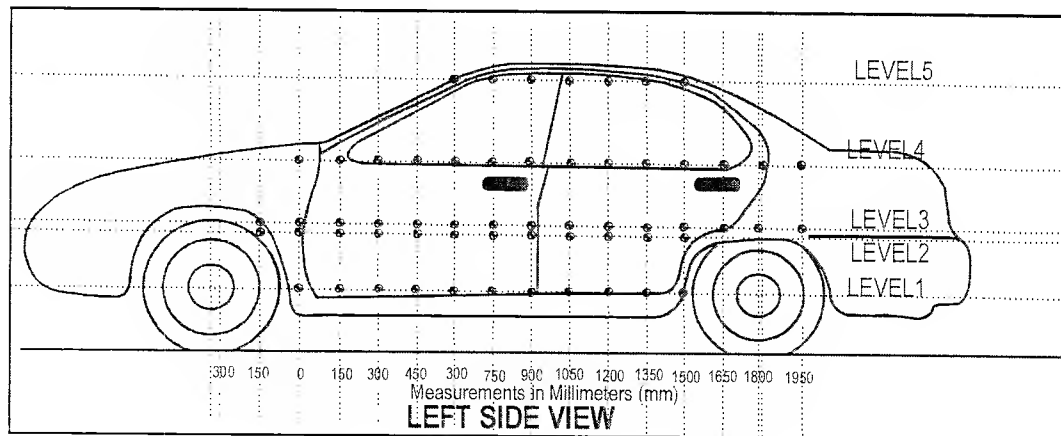
Upper measurement is taken laterally at center of the upper rib accelerometer height from the SID arm segment to the closest part of the vehicle side.

## Data Sheet 9

### Vehicle Side Measurements

Vehicle: 2006 Chevrolet HHR MPV

NHTSA No.: C60106



Level 5 - Window Top

Level 4 - Window Sill

Level 3 - Mid-Door

Level 2 - Occupant H-Point

Level 1 - Axle Centerline Height or Sill Top Height

Measurements Are Taken When The Vehicle Is In The "As Tested" Configuration.

Measurements along the vertical 750 mm line shown above:

Level 5 @ Window Top	=	<u>1490</u>	mm
Level 4 @ Window Sill	=	<u>1025</u>	mm
Level 3 @ Mid Door	=	<u>670</u>	mm
Level 2 @ Occupant H-Point	=	<u>610</u>	mm
Level 1 @ Axle Centerline Height (or Sill Top Height)	=	<u>255</u>	mm

Data Sheet 10

Vehicle Exterior Crush Profiles - All Levels

Vehicle: 2006 Chevrolet HHR MPV

NHTSA No.: C60106

Location	Height		(mm) From Impact Point													
			-1200	-1050	-900	-750	-600	-450	-300	-150	0	150	300	450	600	750
Level 1 Side Sill	255	Pre	---	---	---	---	---	---	---	---	832	827	806	736	738	740
		Post	---	---	---	---	---	---	---	---	827	823	804	738	744	747
		Crush	---	---	---	---	---	---	---	---	5	4	2	-2	-6	-7
Level 2 H-Point	610	Pre	---	---	---	847	---	---	---	---	874	868	837	830	833	835
		Post	---	---	---	848	---	---	---	---	867	740	683	652	667	670
		Crush	---	---	---	-1	---	---	---	---	7	128	154	178	166	165
Level 3 Mid-Door	670	Pre	---	---	---	842	859	---	---	871	871	866	830	832	835	837
		Post	---	---	---	845	861	---	---	861	868	744	667	639	643	642
		Crush	---	---	---	-3	-2	---	---	10	3	122	163	193	192	195
Level 4 Window Sill	1025	Pre	---	---	---	---	637	670	697	720	738	751	759	766	772	775
		Post	---	---	---	---	642	675	701	724	743	749	734	741	740	735
		Crush	---	---	---	---	-5	-5	-4	-4	-5	2	25	25	32	40
Level 5 Window Top	1490	Pre	---	---	---	---	---	---	---	---	---	---	---	---	599	608
		Post	---	---	---	---	---	---	---	---	---	---	---	---	774	778
		Crush	---	---	---	---	---	---	---	---	---	---	---	---	-175	-170

All measurements were recorded using TRC Inc.'s FARO Arm with a tolerance of  $\pm 0.1$  mm.

Data Sheet 10 (Continued)

Vehicle Exterior Crush Profiles - All Levels

Vehicle: 2006 Chevrolet HHR MPV

NIITSA No.: C60106

Location	Height		(mm) From Impact Point												
			900	1050	1200	1350	1500	1650	1800	1950	2100	2250	2400	2550	2700
Level 1 Side Sill	255	Pre	741	741	740	738	739	758	818	---	---	---	---	---	---
		Post	749	750	749	748	747	763	816	---	---	---	---	---	---
		Crush	-8	-9	-9	-10	-8	-5	2	---	---	---	---	---	---
Level 2 H-Point	610	Pre	835	835	833	830	827	822	863	---	---	---	---	---	837
		Post	667	687	659	655	650	640	670	---	---	---	---	---	855
		Crush	168	148	174	175	177	182	193	---	---	---	---	---	-18
Level 3 Mid-Door	670	Pre	837	837	835	833	829	825	866	870	---	---	---	855	839
		Post	648	668	628	625	626	625	664	777	---	---	---	867	856
		Crush	189	169	207	208	203	200	202	93	---	---	---	-12	-17
Level 4 Window Sill	1025	Pre	779	781	781	780	779	777	774	771	767	763	757	749	737
		Post	730	721	667	697	714	731	748	756	739	747	753	757	756
		Crush	49	60	114	83	65	46	26	15	28	16	4	-8	-19
Level 5 Window Top	1490	Pre	608	606	603	600	595	590	584	577	569	560	550	540	514
		Post	773	765	641	663	686	709	730	580	578	572	566	560	538
		Crush	-165	-159	-38	-63	-91	-119	-146	-3	-9	-12	-16	-20	-24

All measurements were recorded using TRC Inc.'s FARO Arm with a tolerance of  $\pm 0.1$  mm.

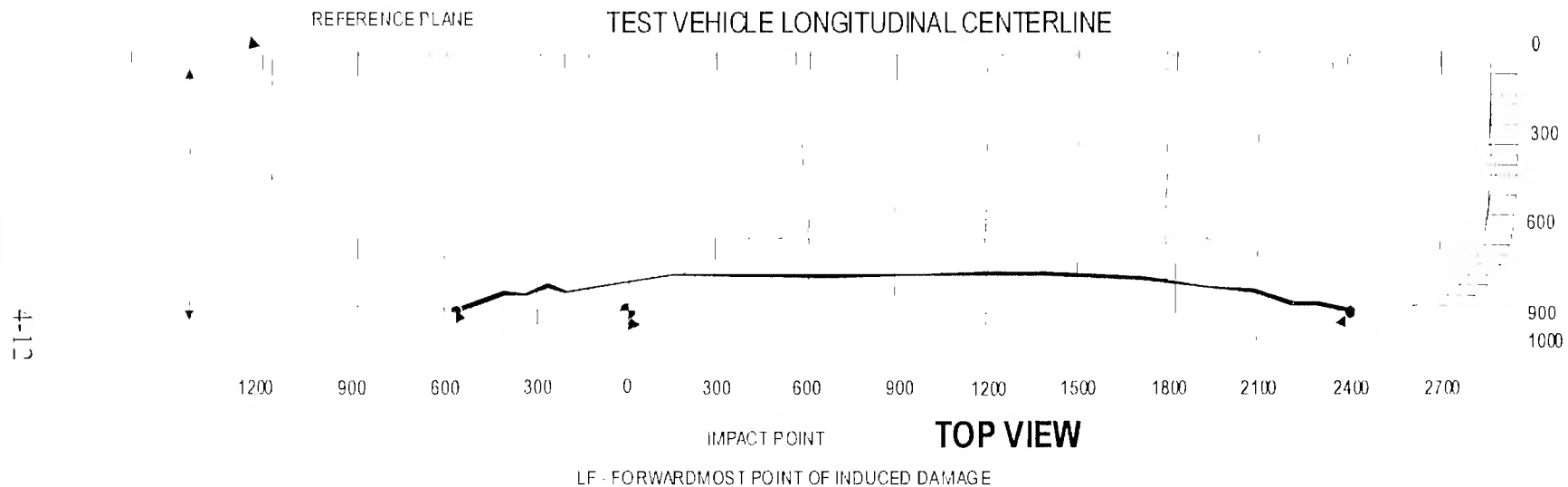
# Data Sheet 11

## Vehicle Damage Profile Distances

Vehicle: 2006 Chevrolet HHR MPV

NHTSA No.: C60106

NOTE: All measurements were recorded using TRC Inc.'s FARO Arm with a tolerance of plus or minus 0.1 mm.



### MEASUREMENT CONVENTIONS:

LR - REARWARDMOST POINT OF INDUCED DAMAGE

Forward of the impact point (towards front of vehicle) is considered negative (-)

Rearward of the impact point (towards rear end of vehicle) is considered positive (+)

DPI Measurements	Pre-Test (mm)	Post-Test (mm)	Static Crush (mm)
6: LF = 0 mm (Level 2)	874	867	7
5: 450 mm (Level 3)	832	639	193
4: 750 mm (Level 3)	837	642	195
3: 1200 mm (Level 3)	835	628	207
2: 1650 mm (Level 3)	825	625	200
1: LR = 2100 mm (Level 4)	767	739	28

Full length of induced damage was 2100 mm.

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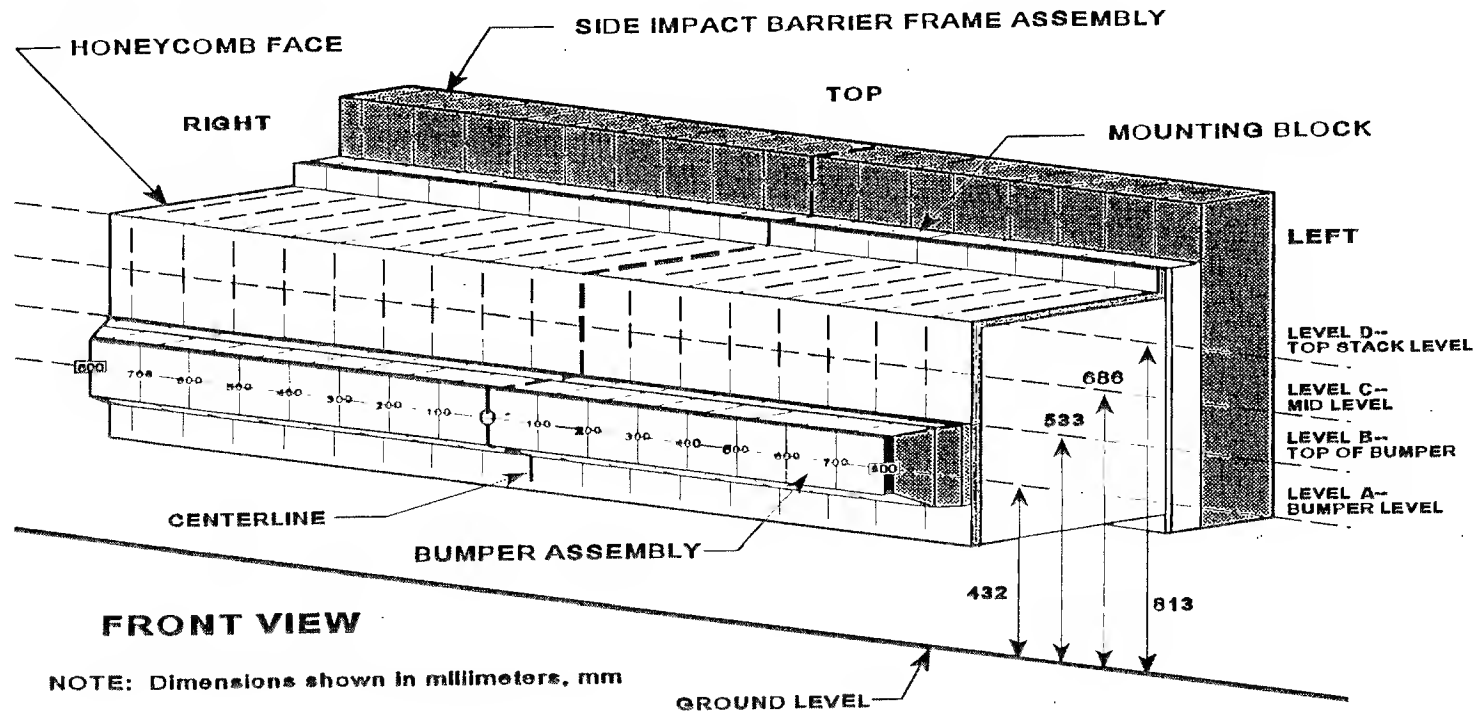
Data Sheet 12

Exterior Static Crush For Impactor Face

(Grid as looking at MDB from front)

Vehicle: 2006 Chevrolet HHR MPV

NHTSA No.: C60106



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Data Sheet 12 (Continued)

Exterior Static Crush For Impactor Face

Vehicle: 2006 Chevrolet HHR MPV

NHTSA No.: C60106

		Distance Right of Center (mm)										Distance Left of Center (mm)								
Location	Height At CL	800	700	600	500	400	300	200	100	0	100	200	300	400	500	600	700	800		
Top Stack Level - Level D	814	-68	-44	-32	-22	-23	-32	-52	-79	-65	-62	-64	-66	-67	-75	-88	-102	-118		
Mid Level Level C <sup>1</sup>	685	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
Top Bumper Level-Level B <sup>2</sup>	560	-125	-117	-113	-113	-109	-106	-104	-104	-373	-104	-96	-92	-90	-88	-95	-113	-139		
Mid Bumper Level - Level A	432	-201	-198	-195	-193	-191	-189	-189	-186	-185	-182	-180	-178	-177	-175	-178	-191	-199		

All measurements were recorded using TRC Inc.'s FARO Arm with a tolerance of  $\pm 0.1$  mm.

<sup>1</sup> Mid Level measurements were not collected prior to test.

<sup>2</sup> Top Bumper measurements are collected at 560 mm to eliminate post-test measurement point obstruction by the bumper element.

Data Sheet 12 (Continued)

Exterior Static Crush For Impactor Face

Vehicle: 2006 Chevrolet IIIR MPV

NIITSA No.: C60106

Deformable Barrier Face Profile

Pre-Test

Index	Xmm	Ymm	Zmm
1	-385.6	801.0	-54.4
2	-386.0	701.0	-54.2
3	-385.6	600.8	-54.0
4	-385.9	501.2	-53.9
5	-385.6	401.1	-54.1
6	-386.1	301.0	-53.4
7	-386.1	201.2	-53.4
8	-386.2	101.4	-53.1
9	-385.9	1.2	-53.0
10	-386.2	-98.5	-53.0
11	-386.2	-198.6	-53.0
12	-386.2	-298.6	-52.9
13	-385.9	-398.6	-52.9
14	-386.2	-498.7	-52.6
15	-385.8	-598.9	-52.2
16	-386.1	-698.6	-52.1
17	-386.5	-798.7	-51.9
18	N/A	N/A	N/A
19	N/A	N/A	N/A
20	N/A	N/A	N/A
21	N/A	N/A	N/A
22	N/A	N/A	N/A

Post-Test

Index	Xmm	Ymm	Zmm
1	-318.6	742.5	-132.5
2	-341.6	646.3	-124.3
3	-353.5	546.9	-122.8
4	-363.8	448.1	-121.3
5	-362.9	349.3	-124.0
6	-354.1	250.9	-121.7
7	-334.1	153.3	-121.5
8	-306.8	58.9	-125.5
9	-321.1	-39.2	-108.4
10	-324.3	-137.5	-124.1
11	-322.7	-236.2	-117.2
12	-320.0	-335.6	-106.9
13	-318.5	-433.3	-92.2
14	-311.7	-531.8	-80.8
15	-298.2	-630.6	-71.6
16	-284.4	-728.5	-63.0
17	-268.2	-826.7	-54.5
18	N/A	N/A	N/A
19	N/A	N/A	N/A
20	N/A	N/A	N/A
21	N/A	N/A	N/A
22	N/A	N/A	N/A

Difference

Index	Xmm	Ymm	Zmm
1	-67.1	58.4	78.1
2	-44.3	54.7	70.1
3	-32.1	53.9	68.7
4	-22.0	53.1	67.4
5	-22.7	51.8	69.8
6	-32.0	50.1	68.3
7	-52.0	47.9	68.1
8	-79.5	42.5	72.4
9	-64.7	40.4	55.5
10	-61.9	39.0	71.1
11	-63.5	37.6	64.3
12	-66.2	37.0	54.1
13	-67.4	34.7	39.3
14	-74.6	33.1	28.3
15	-87.5	31.7	19.4
16	-101.7	29.9	10.9
17	-118.3	28.0	2.5
18	N/A	N/A	N/A
19	N/A	N/A	N/A
20	N/A	N/A	N/A
21	N/A	N/A	N/A
22	N/A	N/A	N/A

Data Sheet 12 (Continued)

Exterior Static Crush For Impactor Face

Vehicle: 2006 Chevrolet HHR MPV

NHTSA No.: C60106

Deformable Barrier Face Profile Cont'd.

Pre-Test

Index	Xmm	Ymm	Zmm
23	N/A	N/A	N/A
24	N/A	N/A	N/A
25	N/A	N/A	N/A
26	N/A	N/A	N/A
27	N/A	N/A	N/A
28	N/A	N/A	N/A
29	N/A	N/A	N/A
30	N/A	N/A	N/A
31	N/A	N/A	N/A
32	N/A	N/A	N/A
33	N/A	N/A	N/A
34	N/A	N/A	N/A
35	-385.2	801.0	-310.1
36	-385.2	701.2	-309.6
37	-385.0	601.2	-309.4
38	-385.1	501.5	-309.4
39	-384.8	401.2	-309.1
40	-384.9	301.0	-309.1
41	-384.8	200.8	-308.9
42	-384.8	101.0	-308.5
43	-384.8	1.0	-308.5
44	-384.9	-98.9	-308.2

Post-Test

Index	Xmm	Ymm	Zmm
23	N/A	N/A	N/A
24	N/A	N/A	N/A
25	N/A	N/A	N/A
26	N/A	N/A	N/A
27	N/A	N/A	N/A
28	N/A	N/A	N/A
29	N/A	N/A	N/A
30	N/A	N/A	N/A
31	N/A	N/A	N/A
32	N/A	N/A	N/A
33	N/A	N/A	N/A
34	N/A	N/A	N/A
35	-259.8	741.4	-337.0
36	-268.3	645.1	-331.8
37	-272.3	544.6	-333.7
38	-272.2	444.6	-334.6
39	-276.2	344.3	-334.6
40	-278.7	244.5	-334.9
41	-281.2	145.9	-334.8
42	-281.1	46.0	-335.7
43	-12.2	1175.6	-109.6
44	-280.5	-155.2	-334.6

Difference

Index	Xmm	Ymm	Zmm
23	N/A	N/A	N/A
24	N/A	N/A	N/A
25	N/A	N/A	N/A
26	N/A	N/A	N/A
27	N/A	N/A	N/A
28	N/A	N/A	N/A
29	N/A	N/A	N/A
30	N/A	N/A	N/A
31	N/A	N/A	N/A
32	N/A	N/A	N/A
33	N/A	N/A	N/A
34	N/A	N/A	N/A
35	-125.4	59.6	26.9
36	-116.9	56.1	22.2
37	-112.7	56.6	24.3
38	-112.9	56.9	25.2
39	-108.6	56.9	25.5
40	-106.1	56.5	25.8
41	-103.5	54.9	25.9
42	-103.7	55.1	27.2
43	-372.6	-1174.6	-198.9
44	-104.4	56.3	26.4

Data Sheet 12 (Continued)

Exterior Static Crush For Impactor Face

Vehicle: 2006 Chevrolet HHR MPV

NIITSA No.: C60106

Deformable Barrier Face Profile Cont'd.

Pre-Test

Index	Xmm	Ymm	Zmm
45	-384.8	-199.0	-308.0
46	-384.9	-299.3	-307.9
47	-384.6	-399.3	-308.1
48	-384.9	-499.0	-307.8
49	-384.9	-599.0	-307.4
50	-384.7	-699.2	-307.2
51	-384.7	-799.2	-307.3
52	-476.4	793.2	-435.9
53	-487.1	695.9	-435.3
54	-487.4	596.0	-434.9
55	-487.8	495.6	-435.1
56	-487.6	395.7	-434.9
57	-487.2	295.9	-435.1
58	-487.0	195.5	-434.6
59	-487.2	95.6	-434.3
60	-487.3	-4.6	-434.1
61	-487.2	-104.4	-434.1
62	-487.1	-204.6	-434.1
63	-487.0	-304.3	-434.1
64	-487.4	-404.7	-434.4
65	-487.6	-504.5	-434.0
66	-487.6	-604.2	-433.8
67	-489.1	-704.1	-433.7
68	-475.4	-800.4	-435.0

Post-Test

Index	Xmm	Ymm	Zmm
45	-288.8	-255.3	-328.0
46	-292.9	-355.0	-322.6
47	-295.1	-454.9	-316.8
48	-297.2	-554.7	-313.6
49	-289.5	-654.4	-304.3
50	-272.1	-752.6	-289.1
51	-245.6	-855.2	-281.3
52	-275.2	735.2	-463.3
53	-289.0	637.9	-467.9
54	-292.9	537.9	-468.0
55	-295.2	437.5	-467.8
56	-297.0	337.7	-466.8
57	-297.9	237.9	-465.7
58	-298.4	138.1	-463.8
59	-301.0	37.9	-463.2
60	-302.3	-62.2	-461.7
61	-305.0	-161.9	-461.4
62	-307.1	-262.1	-460.7
63	-308.9	-361.8	-459.8
64	-310.9	-462.1	-459.3
65	-313.0	-562.1	-458.0
66	-309.6	-662.0	-453.6
67	-295.6	-760.3	-444.2
68	-276.9	-856.7	-433.8

Difference

Index	Xmm	Ymm	Zmm
45	-96.1	56.3	20.0
46	-92.0	55.7	14.7
47	-89.5	55.6	8.7
48	-87.6	55.7	5.9
49	-95.3	55.4	-3.1
50	-112.6	53.3	-18.1
51	-139.1	56.0	-26.0
52	-201.3	58.0	27.4
53	-198.1	58.0	32.6
54	-194.5	58.1	33.1
55	-192.5	58.0	32.8
56	-190.6	58.0	32.0
57	-189.2	58.0	30.6
58	-188.6	57.4	29.2
59	-186.2	57.7	29.0
60	-185.0	57.6	27.6
61	-182.3	57.5	27.4
62	-180.0	57.4	26.7
63	-178.1	57.5	25.7
64	-176.5	57.4	24.8
65	-174.5	57.5	23.9
66	-178.1	57.8	19.8
67	-193.5	56.3	10.5
68	-198.5	56.3	-1.2

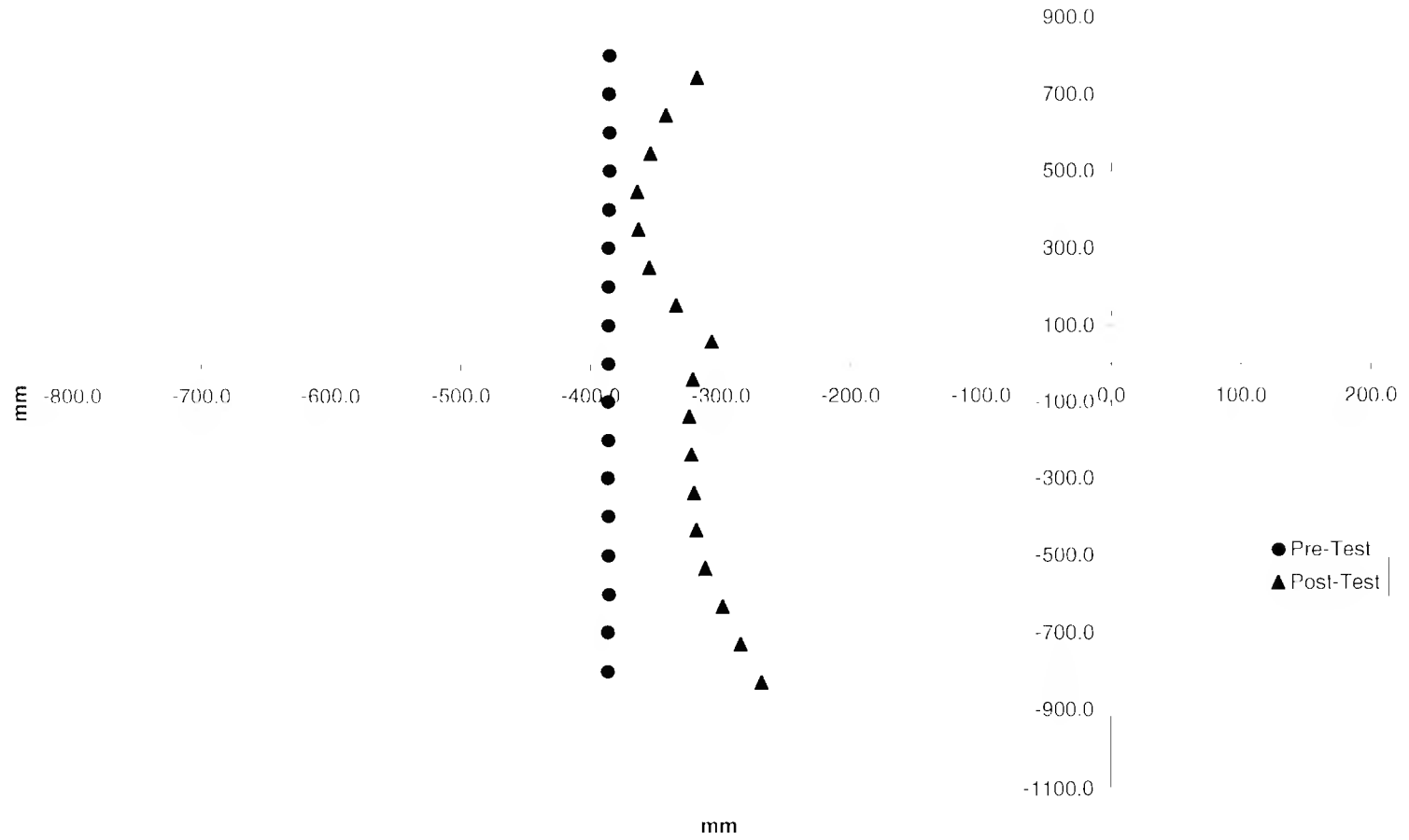
Data Sheet 12 (Continued)

Exterior Static Crush For Impactor Face

Vehicle: 2006 Chevrolet HHR MPV

NHTSA No.: C60106

Deformable Barrier Face Profile 1-17



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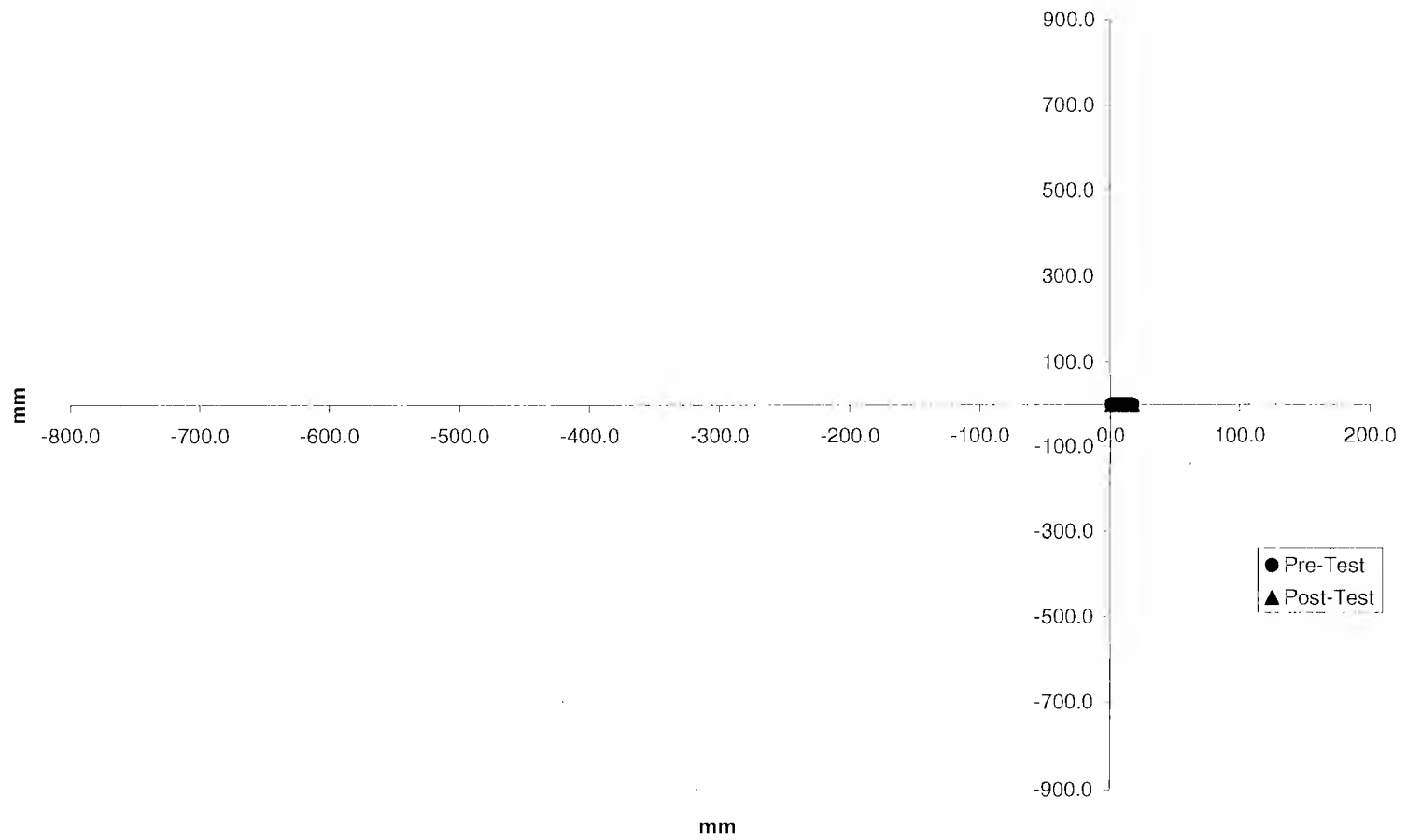
Data Sheet 12 (Continued)

Exterior Static Crush For Impactor Face

Vehicle: 2006 Chevrolet HHR MPV

NHTSA No.: C60106

**Deformable Barrier Face Profile 18-34**



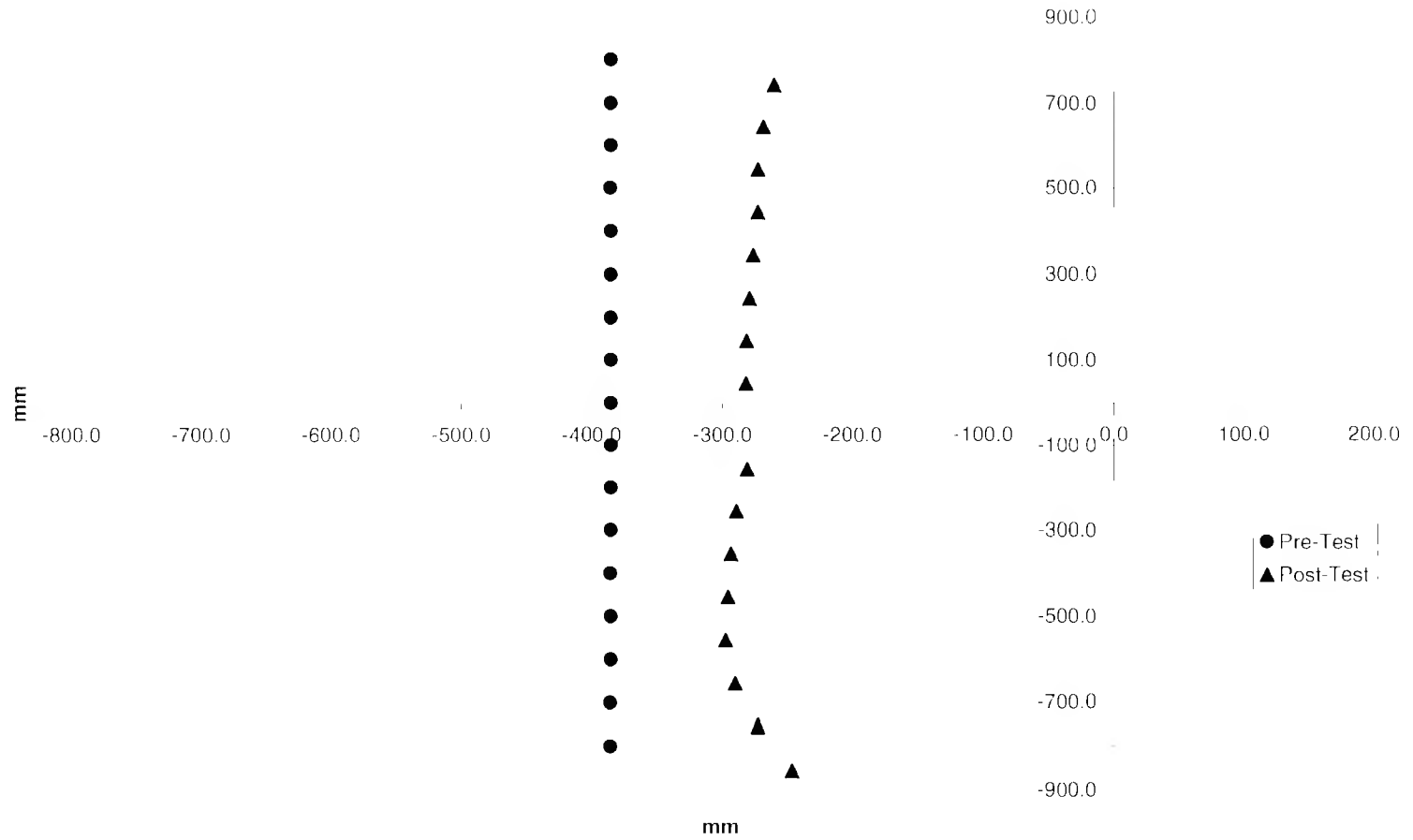
Data Sheet 12 (Continued)

Exterior Static Crush For Impactor Face

Vehicle: 2006 Chevrolet HHR MPV

NHTSA No.: C60106

Deformable Barrier Face Profile 35-51



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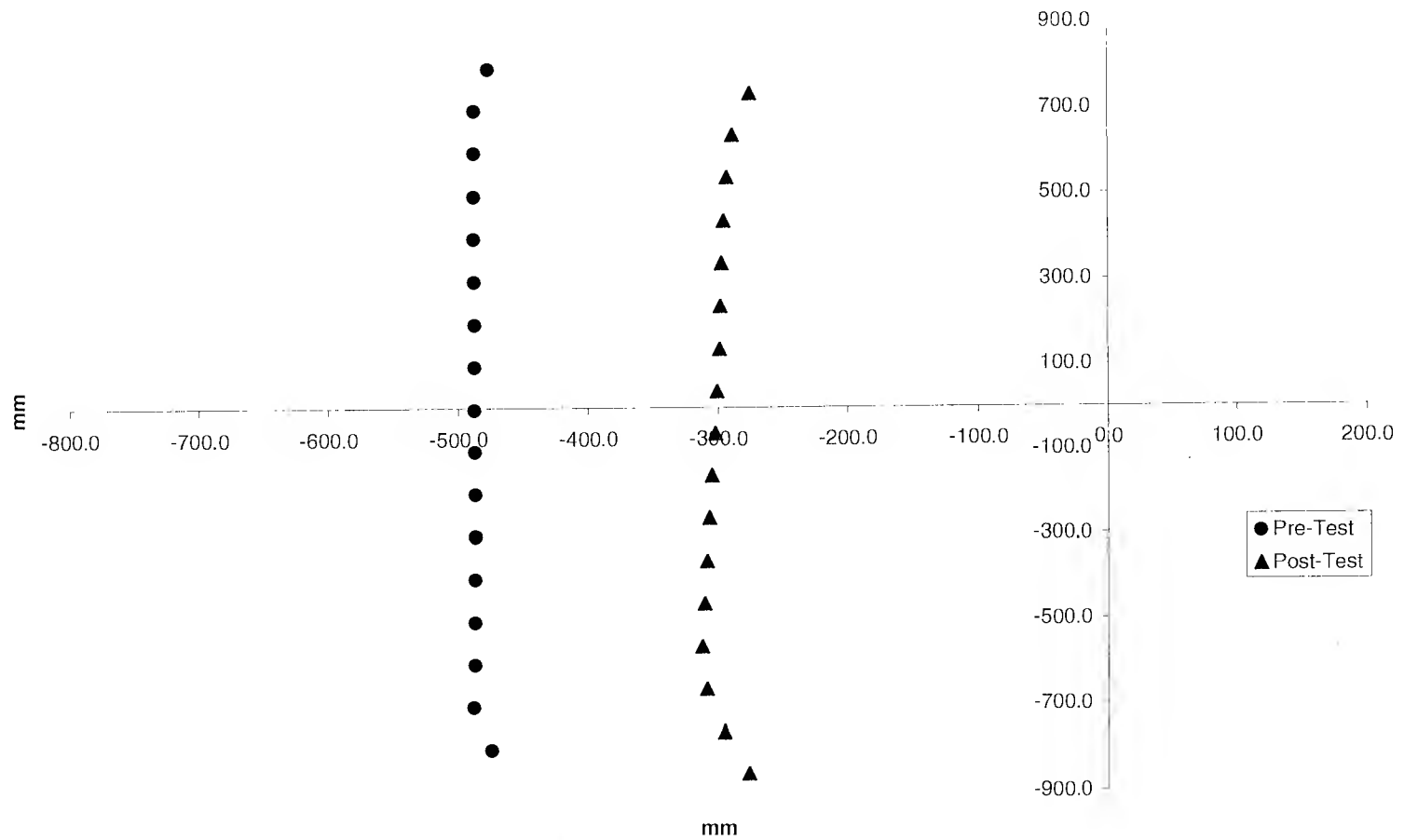
Data Sheet 12 (Continued)

Exterior Static Crush For Impactor Face

Vehicle: 2006 Chevrolet HHR MPV

NIITSA No.: C60106

Deformable Barrier Face Profile 52-68

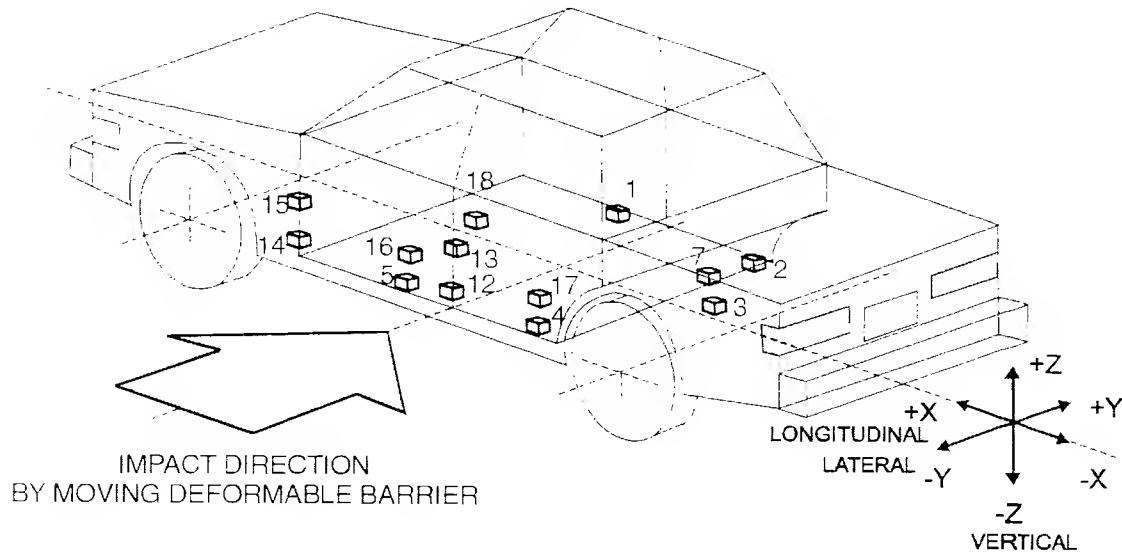


Data Sheet 13

Test Vehicle Accelerometer Locations and Data Summary

Vehicle: 2006 Chevrolet HHR MPV

NHTSA No.: C60106



- 1-Right Front Side Sill
- 2-Right Side Sill at Rear Seat
- 3-Rear Floorpan above Axle
- 4-Left Side Sill at Rear Seat
- 5-Left Side Sill at Front Seat
- 7-Right Rear Occupant Compartment
- 12-Left Side Lower B-pillar

- 13-Left Side Middle B-pillar
- 14-Left Side Lower A-pillar
- 15-Left Side Middle A-pillar
- 16-Left Side Front Seat Track at H-point
- 17-Left Rear Seat Track at H-point
- 18-Vehicle Center of Gravity

Data Sheet 13 (Continued)

Test Vehicle Accelerometer Locations and Data Summary

Vehicle: 2006 Chevrolet HHR MPV

NHTSA No.: C60106

Location	Coordinates (millimeters)			Positive Direction		Negative Direction	
	X	Y	Z	Max. (g)	Time (ms)	Max. (g)	Time (ms)
1 Right Side Sill at Front Seat							
Longitudinal				3.5	62.8	6.2	17.6
Lateral				22.1	13.7	1.8	139.8
Vertical <sup>1</sup>				----	----	----	----
Resultant <sup>1</sup>				----	----		
2 Right Side Sill at Rear Seat							
Longitudinal				4.1	63.4	10.9	24.3
Lateral				37.2	12.2	2.6	97.2
Vertical				5.2	82.9	8.7	27.3
Resultant				37.2	12.2		
3 Rear Floorpan Above Axle							
Longitudinal				5.7	62.2	5.8	43.9
Lateral				32.6	10.2	2.0	97.8
Vertical				11.2	12.4	6.3	8.2
Resultant				32.8	10.2		
4 Left Side Sill at Rear Seat							
Longitudinal							
Lateral				27.4	22.9	7.2	17.0
Vertical							
Resultant							
5 Left Side Sill at Front Seat							
Longitudinal							
Lateral				23.1	10.7	8.7	16.9
Vertical							
Resultant							

Data Sheet 13 (Continued)

Test Vehicle Accelerometer Locations and Data Summary

Vehicle: 2006 Chevrolet HHR MPV

NHTSA No.: C60106

Location	Coordinates (millimeters)			Positive Direction		Negative Direction	
	X	Y	Z	Max. (g)	Time (ms)	Max. (g)	Time (ms)
7 Right Rear Occupant Compartment							
Longitudinal							
Lateral				27.6	10.3	2.3	97.7
Vertical							
Resultant							
12 Left Lower B-Pillar							
Longitudinal							
Lateral				214.8	7.1	85.7	13.8
Vertical							
Resultant							
13 Left Middle B-Pillar							
Longitudinal							
Lateral				155.0	8.7	66.6	14.6
Vertical							
Resultant							
14 Left Lower A-Pillar							
Longitudinal							
Lateral				54.7	2.5	23.8	78.2
Vertical							
Resultant							
15 Left Middle A-Pillar							
Longitudinal							
Lateral <sup>1</sup>				---	---	---	---
Vertical							
Resultant							

Data Sheet 13 (Continued)

Test Vehicle Accelerometer Locations and Data Summary

Vehicle: 2006 Chevrolet HHR MPV

NHTSA No.: C60106

Location	Coordinates (millimeters)			Positive Direction		Negative Direction	
	X	Y	Z	Max. (g)	Time (ms)	Max. (g)	Time (ms)
16 Left Front Seat Track							
Longitudinal							
Lateral				40.5	20.8	13.9	31.7
Vertical							
Resultant							
17 Left Rear Seat Track							
Longitudinal							
Lateral				30.1	10.0	2.0	97.9
Vertical							
Resultant							
18 Vehicle CG							
Longitudinal				28.4	20.4	30.7	24.7
Lateral				72.8	29.5	57.1	23.4
Vertical				35.1	31.4	18.6	18.2
Resultant				78.0	29.7		

Reference: X: + Forward from rear bumper  
Y: + Rightward from vehicle centerline  
Z: + Downward from ground level

For acceleration data sign convention see Report Sign Convention in Appendix D.

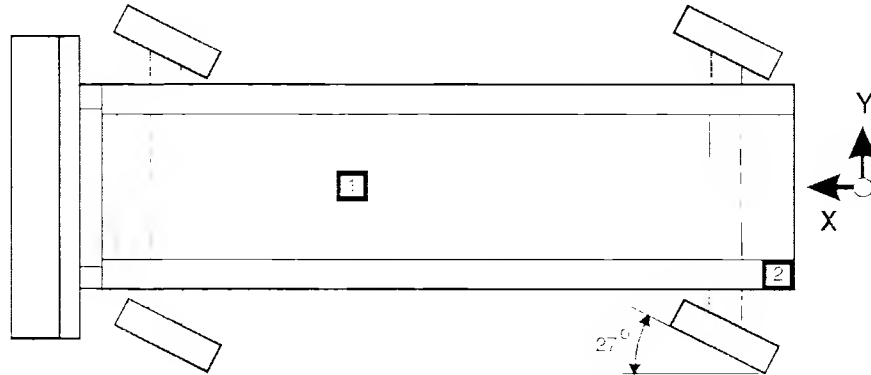
<sup>1</sup> See Data Acquisition Explanations

# Data Sheet 14

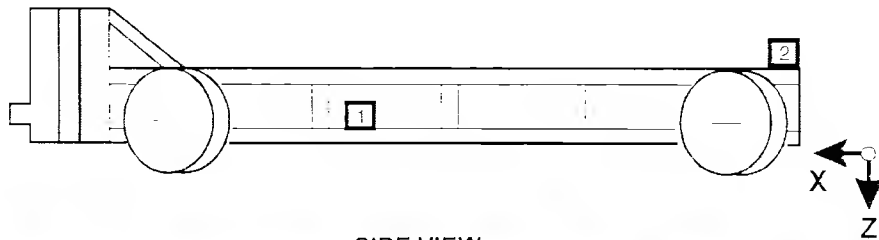
## MDB Accelerometer Locations and Data Summary

Vehicle: 2006 Chevrolet HHR MPV

NHTSA No.: C60106



TOP VIEW



SIDE VIEW

Accel. No.	Location	Coordinates (millimeters)			Positive Direction		Negative Direction	
		X*	Y*	Z*	Max. (g)	Time (ms)	Max. (g)	Time (ms)
1	MDB Center of Gravity	1855	0	-520				
	Longitudinal X				6.7	99.9	21.6	41.2
	Lateral Y				3.4	64.3	8.4	50.4
	Vertical Z				7.1	39.8	7.1	34.6
	Resultant R				22.8	40.6		
2	Rear Frame Member	412	-677	-625				
	Longitudinal X				1.6	139.4	24.1	45.2
	Lateral Y				2.7	23.0	2.4	62.3

\*Reference: X = Rear Bumper (- Forward)

Y = Vehicle Centerline (- To Right)

Z = Ground Level (- Down)

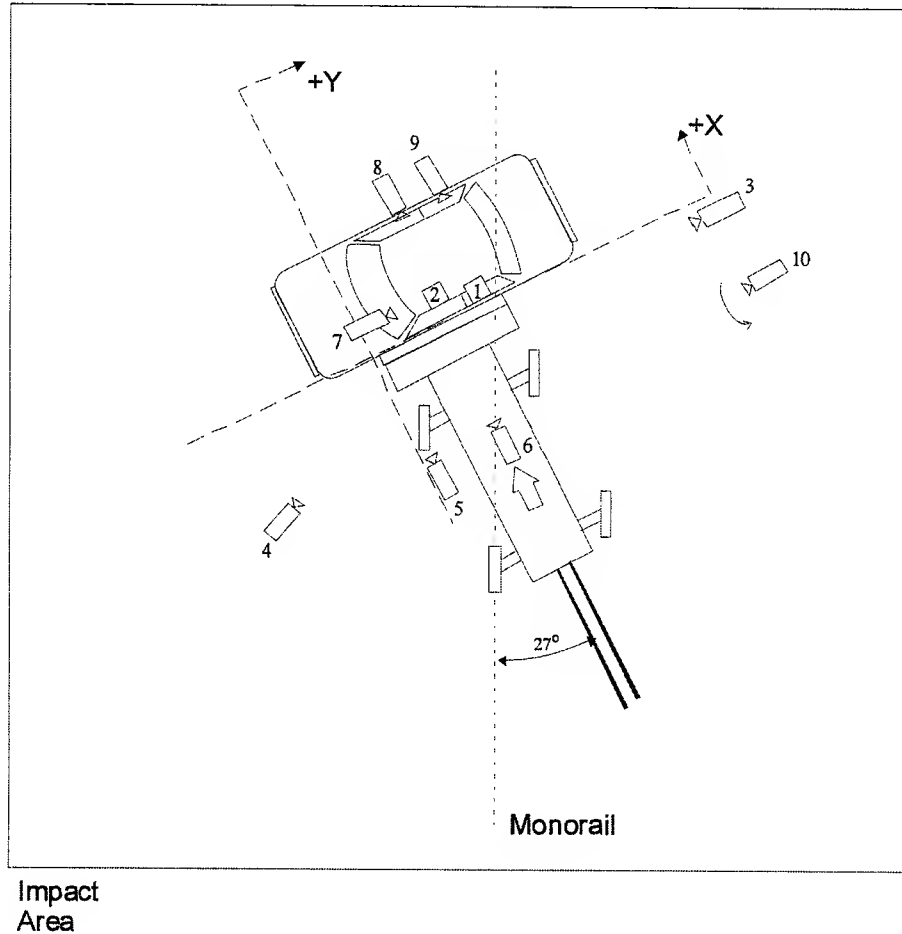
All measurements accurate to within  $\pm 3$  mm.

## Data Sheet 15

### High-Speed Camera Locations and Data Summary

Vehicle: 2006 Chevrolet HHR MPV

NHTSA No.: C60106



Camera Number	Location	Location, mm			Angle (deg.)	Lens (mm)	Speed (fps)
		X	Y	Z			
1	Overhead wide	250	2150	-5750	-77.5	10	1000
2	Overhead tight	370	1800	-5750	-85.5	50	1000
3	Right side of MDB	0	9350	-1020	-1.5	12.5	1000
4	Left side of MDB	-2800	-4100	-1000	-3.1	12.5	1000
5	Onboard MDB left side	-1750	-40	-720	-0.5	13	1000
6	Onboard MDB center	-2480	830	-1353	-5.2	17	1000
7	Onboard vehicle front	450	-450	-1370	-8.4	25	1000
8	Onboard side front door	1600	750	-1300	-9.1	6.5	1000
9	Onboard side rear door	1600	1650	-1290	-10.0	6.5	1000
10	Documentary/Panning	N/A	N/A	N/A	N/A	Zoom	30

+X: Forward (referenced to MDB) from impact point

+Y: Rightward (referenced to MDB) from impact point

+Z: Downward from ground level

Section 5

Vehicle Fuel System Integrity



Data Sheet 16

FMVSS 301 Fuel System Integrity Data

NHTSA No.: C60106

Test Date: 03/20/06

Vehicle Year/Make/Model/Body Style: 2006 Chevrolet HHR MPV

\*\*\*\*\*

Test Vehicle Impact Type :

- ☐ Frontal (48.3 km/h)  
☐ Oblique (48.3 km/h) with ☐° barrier  
face first contacting the (driver/passenger) side  
☐ Rear Moving Barrier (48.3 km/h)  
☐ Lateral Moving Barrier (32.2 km/h)  
☒ Side Impact Moving Deformable Barrier (62.3  
km/h) contacting the driver side

Fuel Spillage Measurement:

1. From impact until vehicle motion ceases
2. For five-minute period after vehicle motion ceases
3. For next 25 minutes.

Actual	Maximum Allowed
0 g	28 g
0 g	142 g
0 g	28 g/1 minute

Solvent Spillage Details :

None

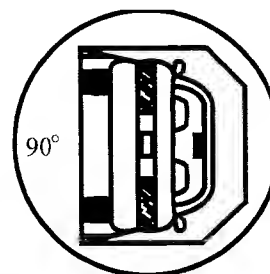
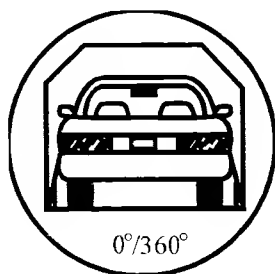
Data Sheet 17

FMVSS 301 Rollover Data

Vehicle: 2006 Chevrolet HHR MPV

NHTSA No.: C60106

0 - 90 Degrees



1. Determination of Solvent Collection Time Period:

Rollover Fixture 90° Rotation Time      1 minutes      30 seconds

(Spec. Range = 1 to 3 minutes)

FMVSS 301 Position Hold Time +      5 minutes      0 seconds

Total      6 minutes      30 seconds

Next whole minute interval      7 minutes

2. FMVSS 301 Requirements:

(1) Time Period

First 5 minutes from onset of rotation	6th min.	7th min.	8th min. (if required)
--	----------	----------	------------------------

(2) Maximum Allowable Solvent Spillage

142 g	28 g	28 g	28 g
-------	------	------	------

3. Actual Test Vehicle Solvent Spillage:

0 g	0 g	0 g	N/A
-----	-----	-----	-----

Note: Record spillage for whole minute intervals only as determined above.

4. Solvent Spillage Location(s):

None

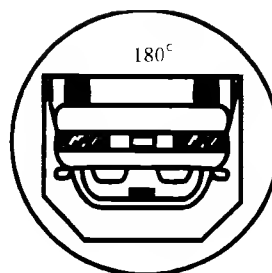
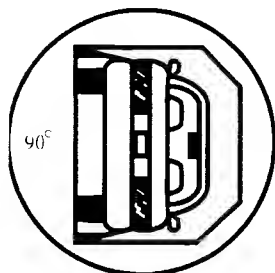
Data Sheet 17 (Continued)

FMVSS 301 Rollover Data

Vehicle: 2006 Chevrolet HHR MPV

NHTSA No.: C60106

90 - 180 Degrees



1. Determination of Solvent Collection Time Period:

Rollover Fixture 90° Rotation Time	<u>1</u>	minutes	<u>30</u>	seconds
(Spec. Range = 1 to 3 minutes)				
FMVSS 301 Position Hold Time --	<u>5</u>	minutes	<u>0</u>	seconds
Total	<u>6</u>	minutes	<u>30</u>	seconds
Next whole minute interval	<u>7</u>	minutes		

2. FMVSS 301 Requirements:

(1) Time Period

First 5 minutes from onset of rotation	6th min.	7th min.	8th min. (if required)
--	----------	----------	------------------------

(2) Maximum Allowable Solvent Spillage

142 g	28 g	28 g	28 g
-------	------	------	------

3. Actual Test Vehicle Solvent Spillage:

0 g	0 g	0 g	N/A
-----	-----	-----	-----

Note: Record spillage for whole minute intervals only as determined above.

4. Solvent Spillage Location(s):

None

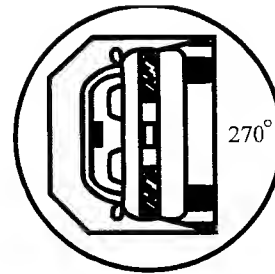
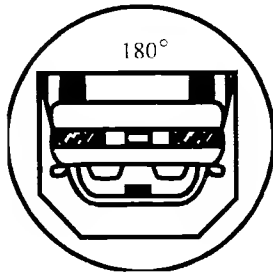
Data Sheet 17 (Continued)

FMVSS 301 Rollover Data

Vehicle: 2006 Chevrolet HHR MPV

NHTSA No.: C60106

180 - 270 Degrees



1. Determination of Solvent Collection Time Period:

Rollover Fixture 90° Rotation Time      1 minutes      30 seconds

(Spec. Range = 1 to 3 minutes)

FMVSS 301 Position Hold Time +      5 minutes      0 seconds

Total      6 minutes      30 seconds

Next whole minute interval      7 minutes

2. FMVSS 301 Requirements:

(1) Time Period

First 5 minutes from onset of rotation	6th min.	7th min.	8th min. (if required)
--	----------	----------	------------------------

(2) Maximum Allowable Solvent Spillage

142 g	28 g	28 g	28 g
-------	------	------	------

3. Actual Test Vehicle Solvent Spillage:

0 g	0 g	0 g	N/A
-----	-----	-----	-----

Note: Record spillage for whole minute intervals only as determined above.

4. Solvent Spillage Location(s):

None

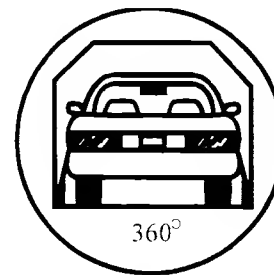
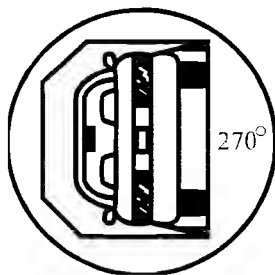
Data Sheet 17 (Continued)

FMVSS 301 Rollover Data

Vehicle: 2006 Chevrolet HHR MPV

NHTSA No.: C60106

270 - 360 Degrees



1. Determination Of Solvent Collection Time Period:

Rollover Fixture 90° Rotation Time      1 minutes      30 seconds

(Spec. Range = 1 to 3 minutes)

FMVSS 301 Position Hold Time -      5 minutes      0 seconds

Total      6 minutes      30 seconds

Next whole minute interval      7 minutes

2. FMVSS 301 Requirements:

(1) Time Period

First 5 minutes from onset of rotation	6th min.	7th min.	8th min. (if required)
--	----------	----------	------------------------

(2) Maximum Allowable Solvent Spillage

142 g	28 g	28 g	28 g
-------	------	------	------

3. Actual Test Vehicle Solvent Spillage:

0 g	0 g	0 g	N/A
-----	-----	-----	-----

Note: Record spillage for whole minute intervals only as determined above.

4. Solvent Spillage Location(s):

None

Appendix A

Photographs

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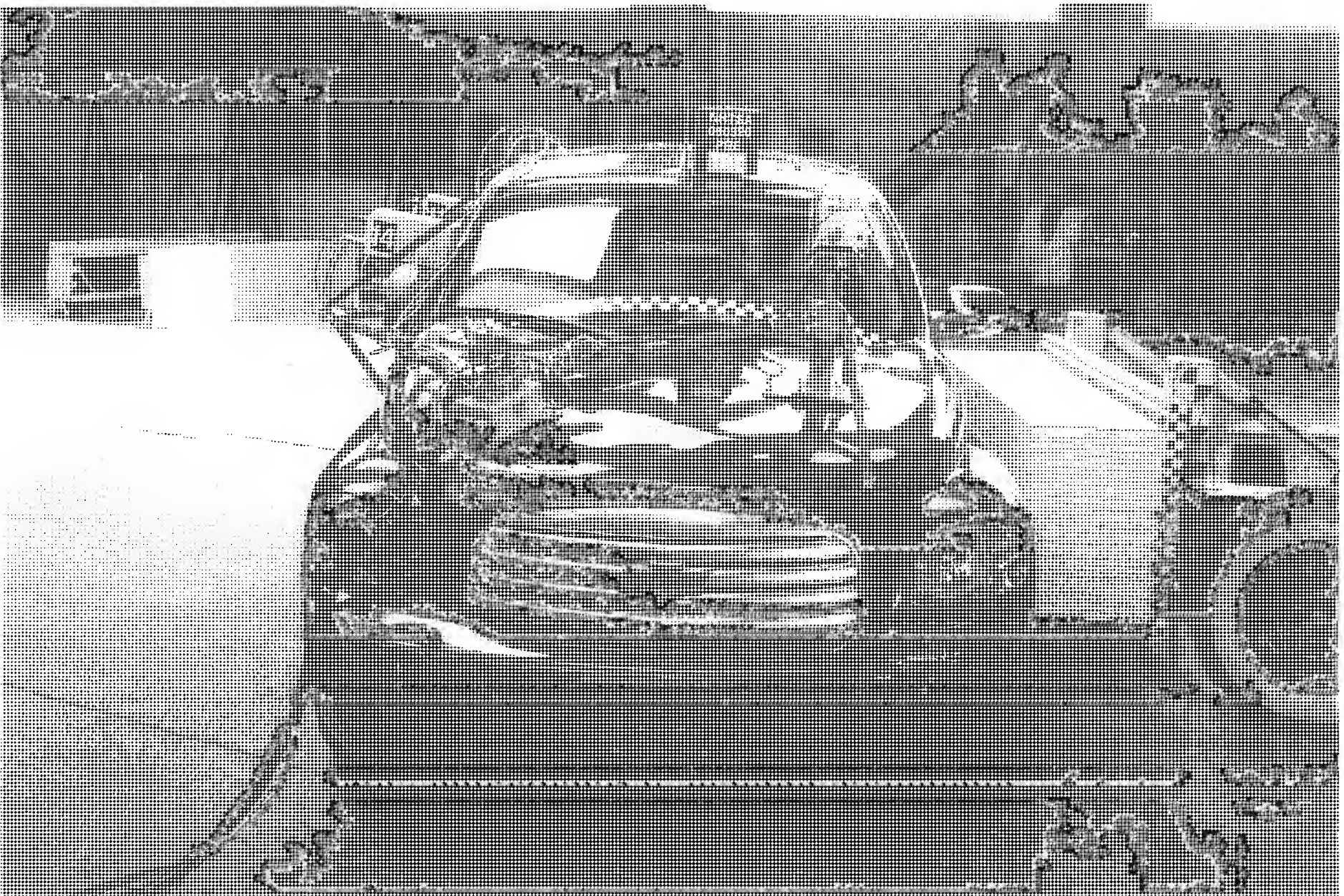


Figure A-1 Pre-Test Front View of Test Vehicle  
A-5

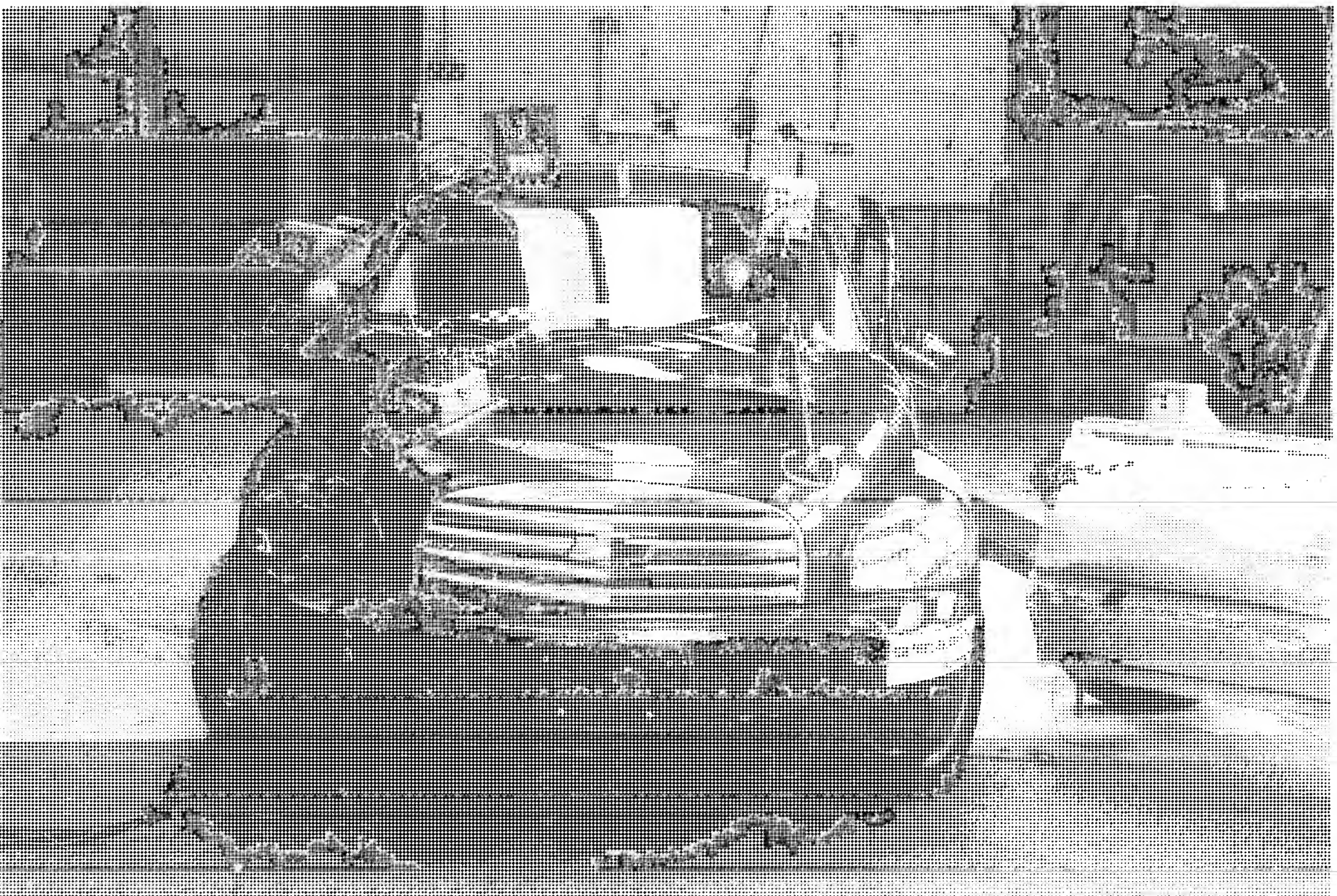


FIGURE A-2 REAR VIEW OF TEST VEHICLE  
A-6

000320



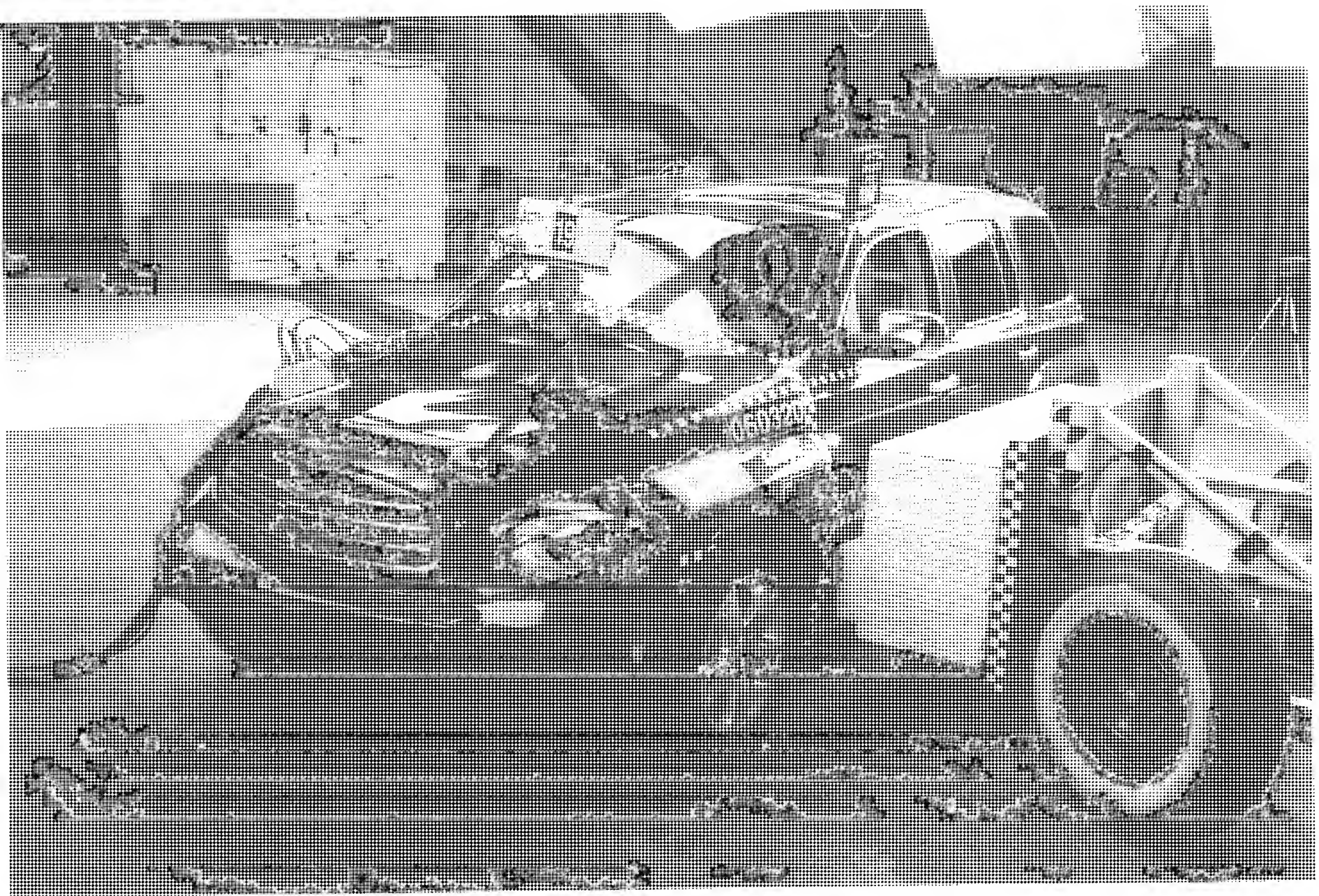


FIGURE A-3 Pre-Test 1.491 From View of Test Vehicle

A-7

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Figure A-4 First-Test Left Front View of Test Vehicle  
A-8



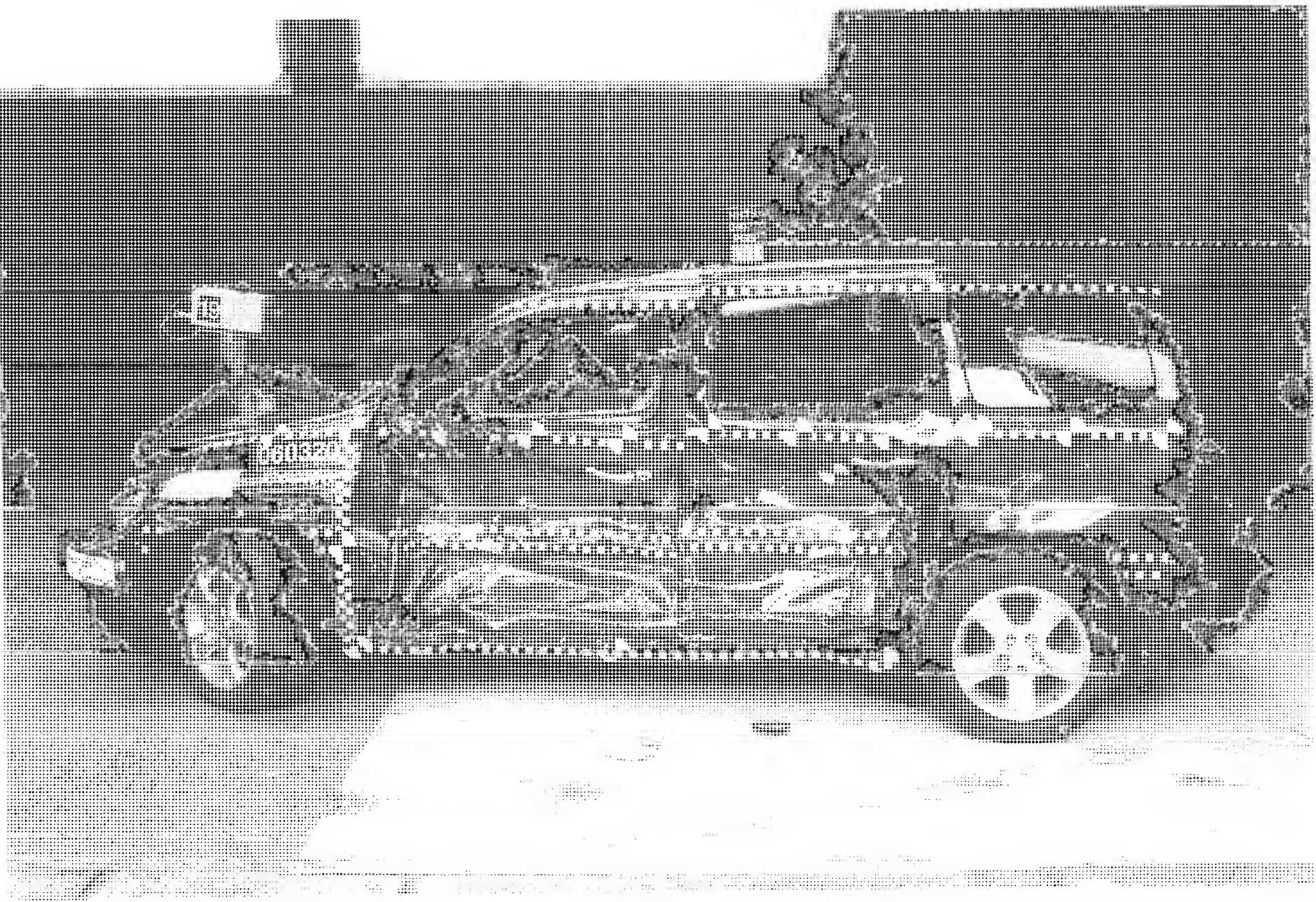


Figure A-5 Post-Test Impacted Side View of Test Vehicle  
A-9



Figure A-4 Pre-Test Left Rear View of Test Vehicle  
A-10





FIGURE A-7 Front-Left Rear View of Test Vehicle  
A-11

060320



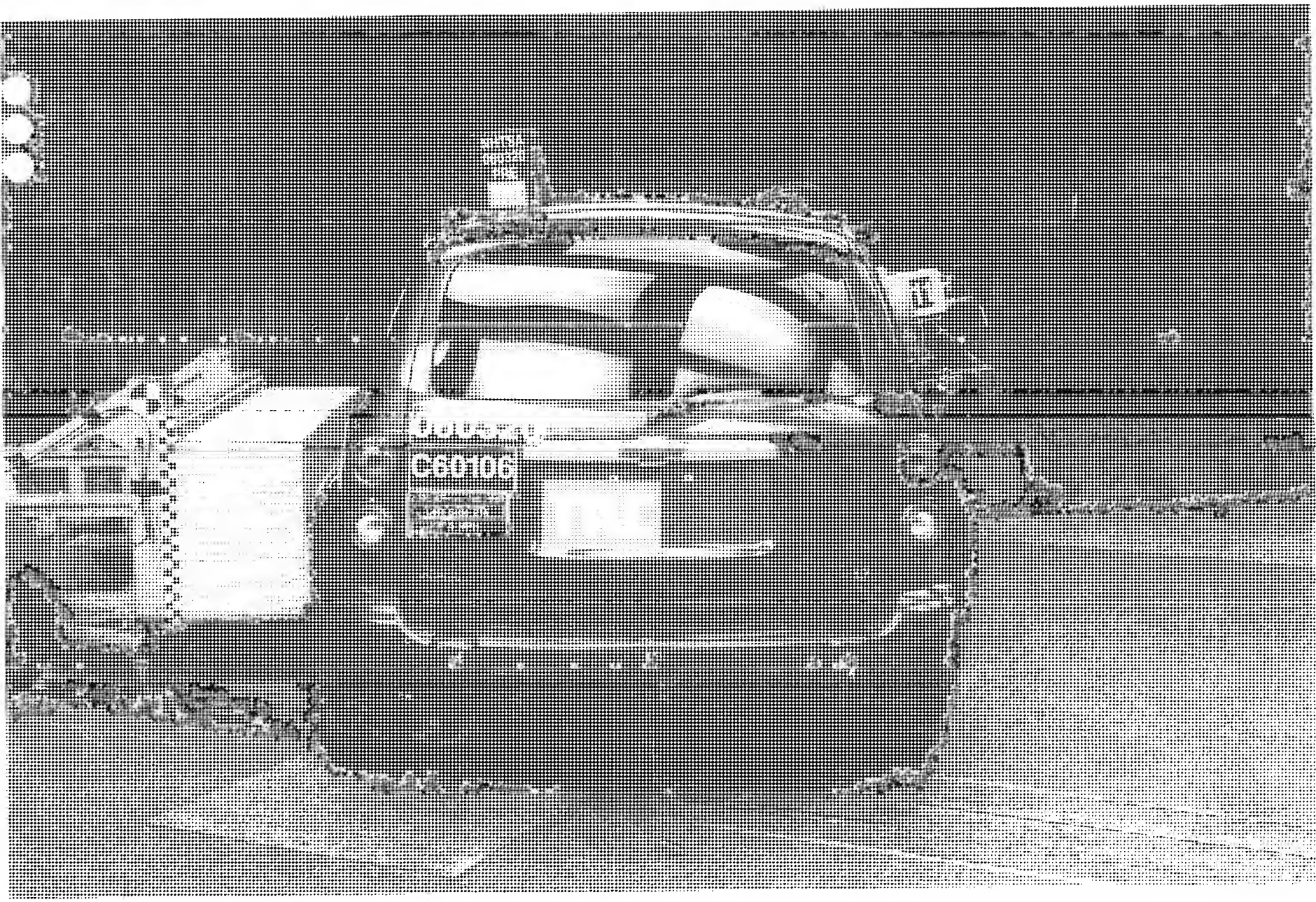


FIGURE A-8 Pre-Test Rear View of Test Vehicle  
A-12



Figure A-9 Rear View of Test Vehicle



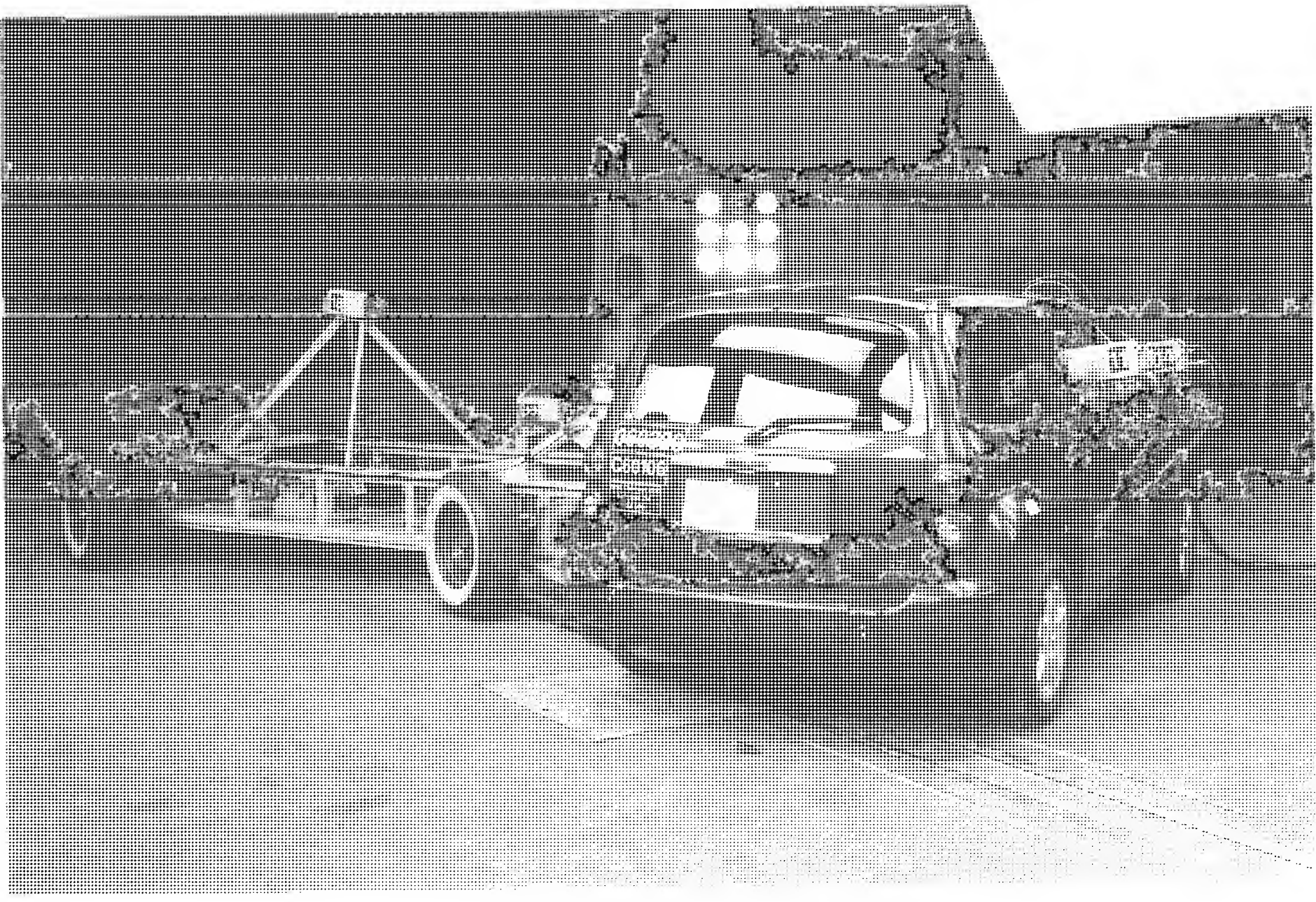


FIGURE A-14 Front Right View of Test Vehicle  
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FIGURE A-11 Post-Test Right Hand View of Test Vehicle  
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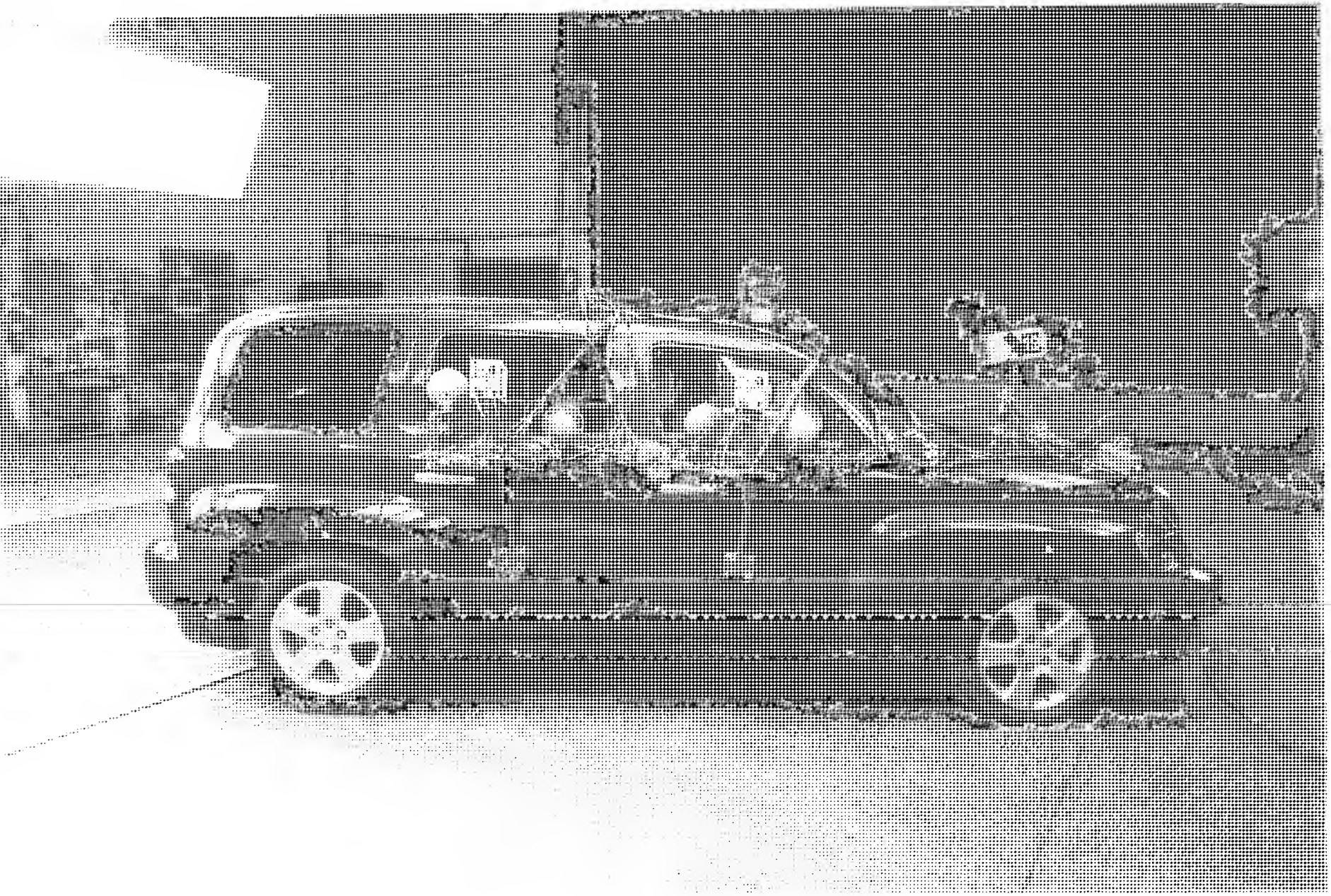


FIGURE A-12 REAR THREE-QUARTER VIEW OF TEST VEHICLE  
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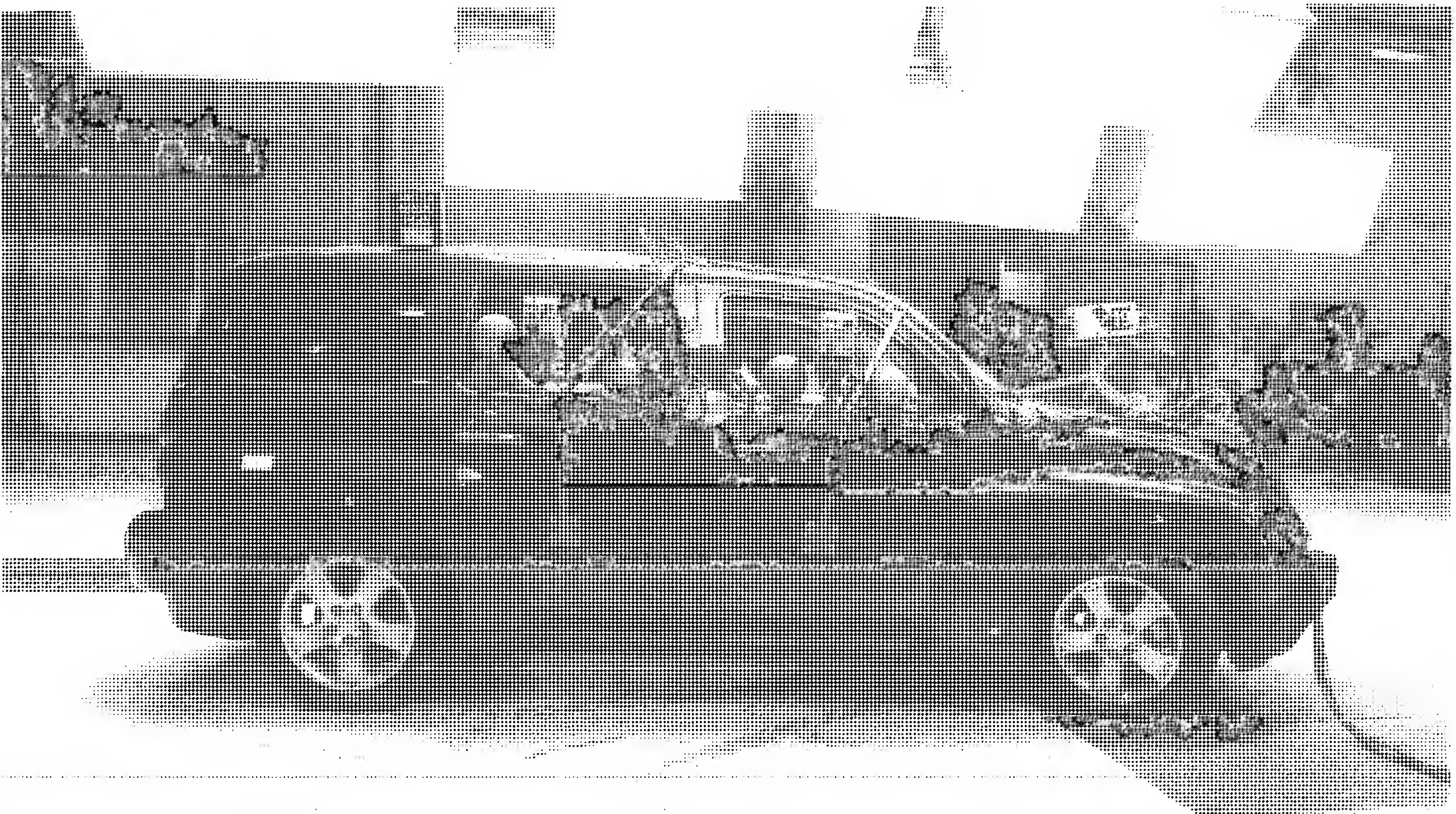


Figure A-13 Post-Fire Right Side View of Test Vehicle  
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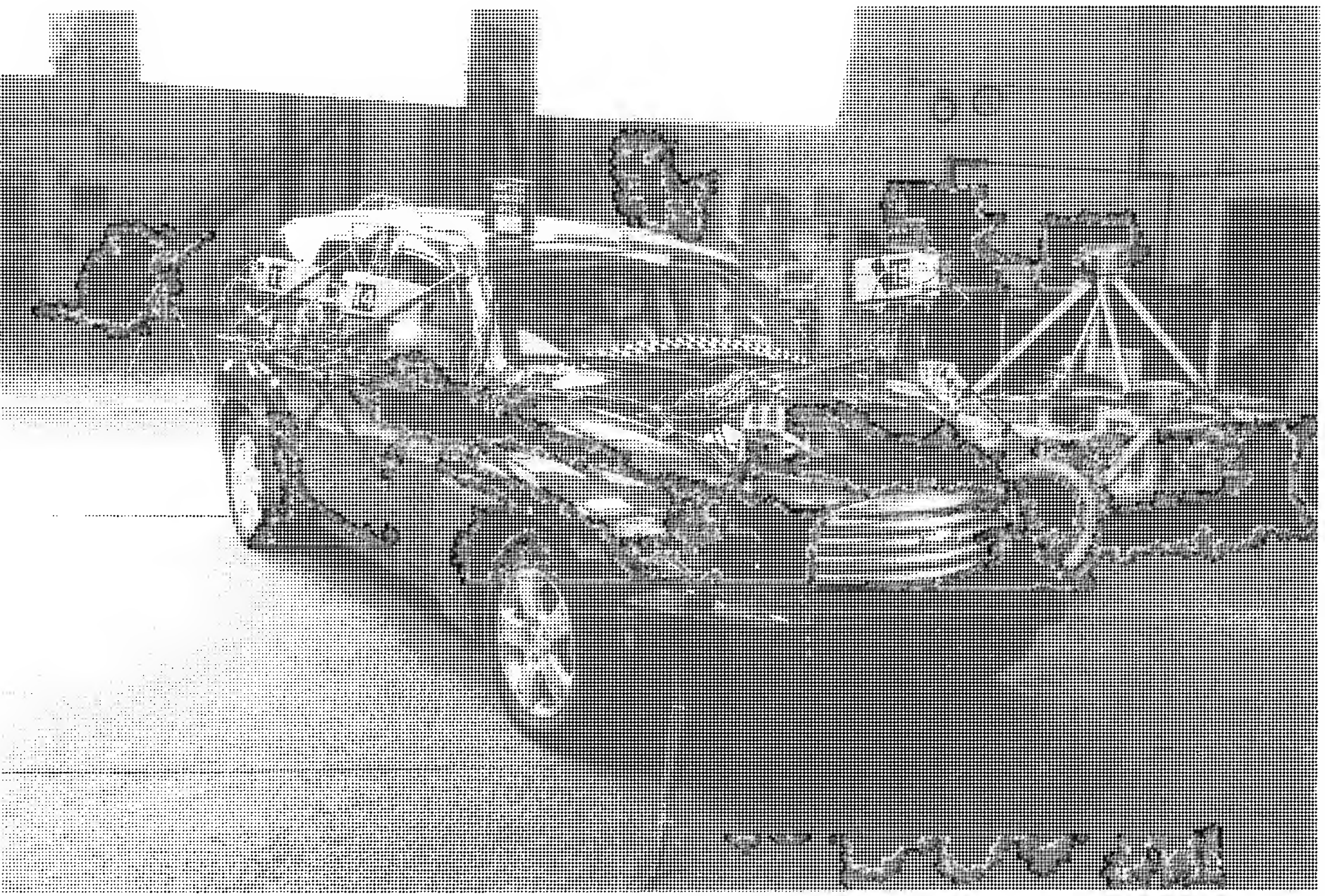


FIGURE A-14 PRO-TEST RIGHT FRONT VIEW OF TEST VEHICLE  
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Figure A-15 Post-Trip Right Front View of Test Vehicle  
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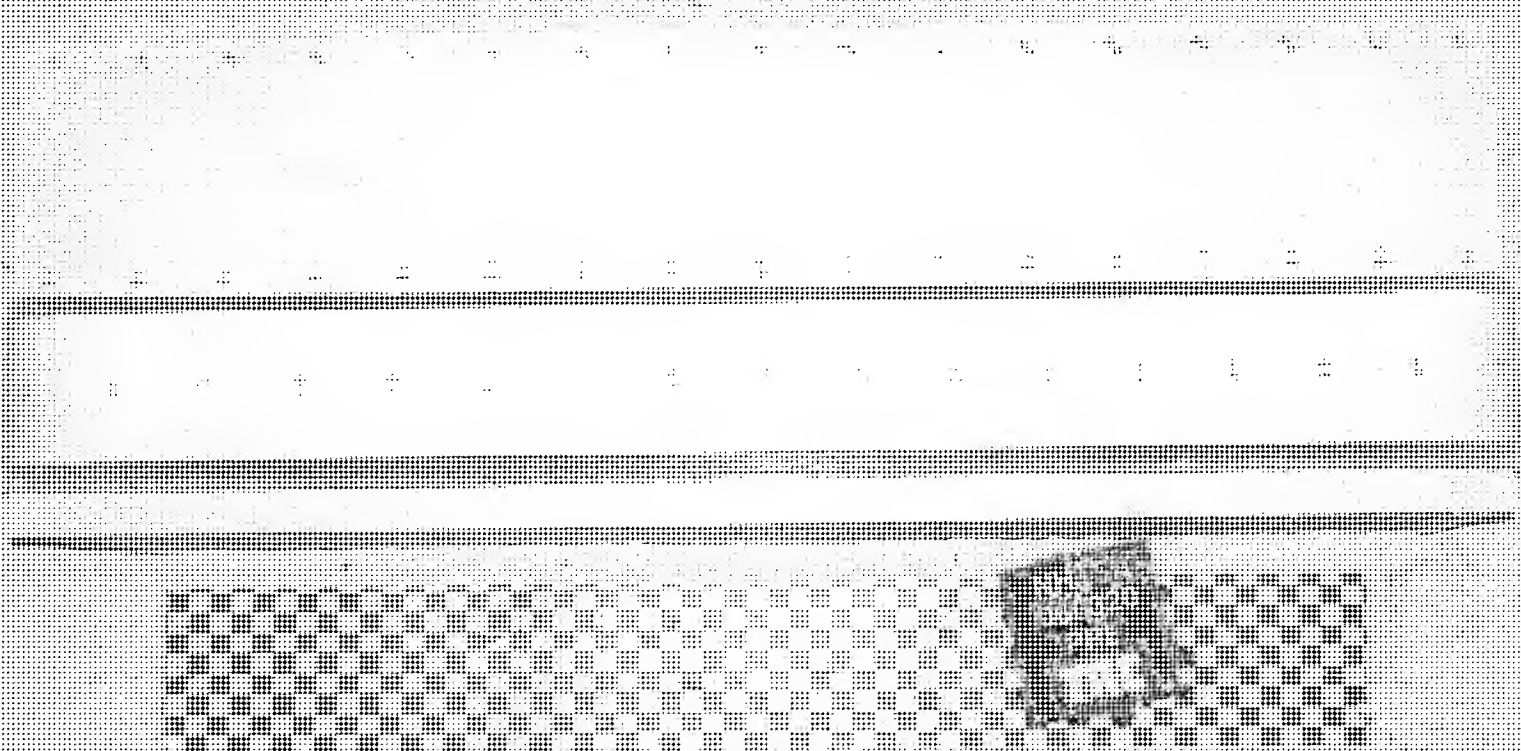


Figure A-16 Frontal View of Impactor Face  
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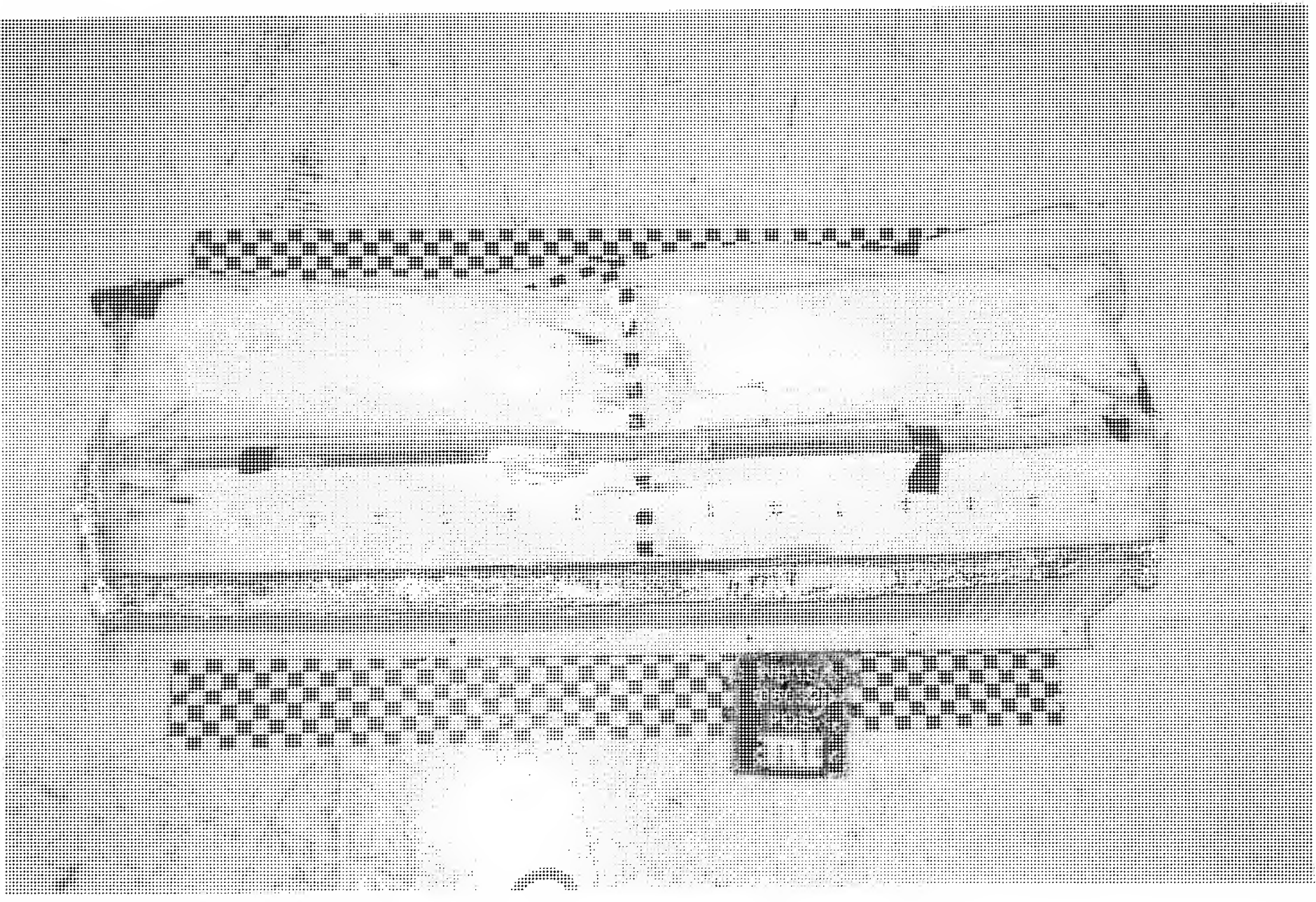


FIGURE A-17 Post-Test Frontal View of Impactor Trace  
A-21



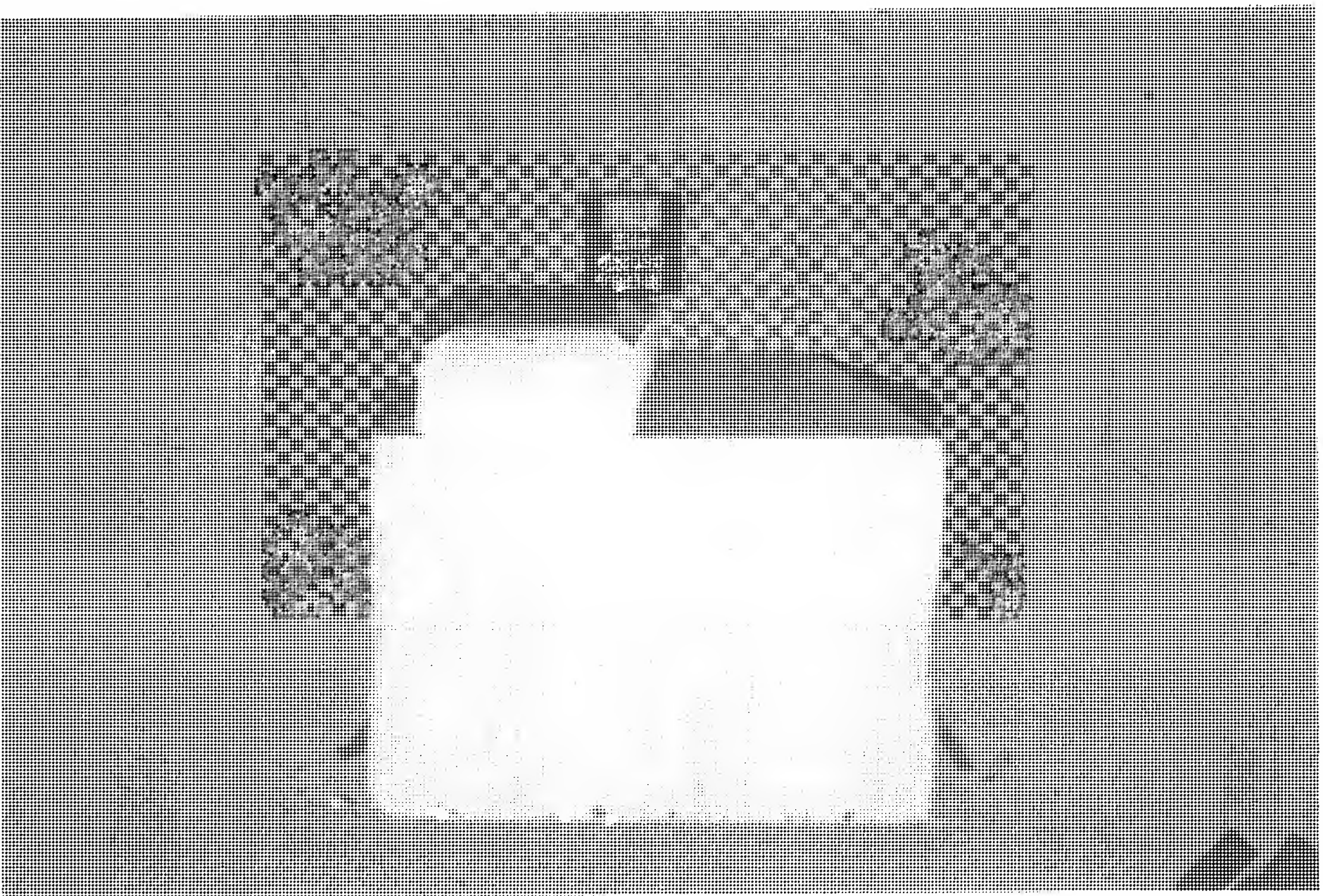


Figure A-18 Pre-Test Left Side View of Impactor Face  
A-22

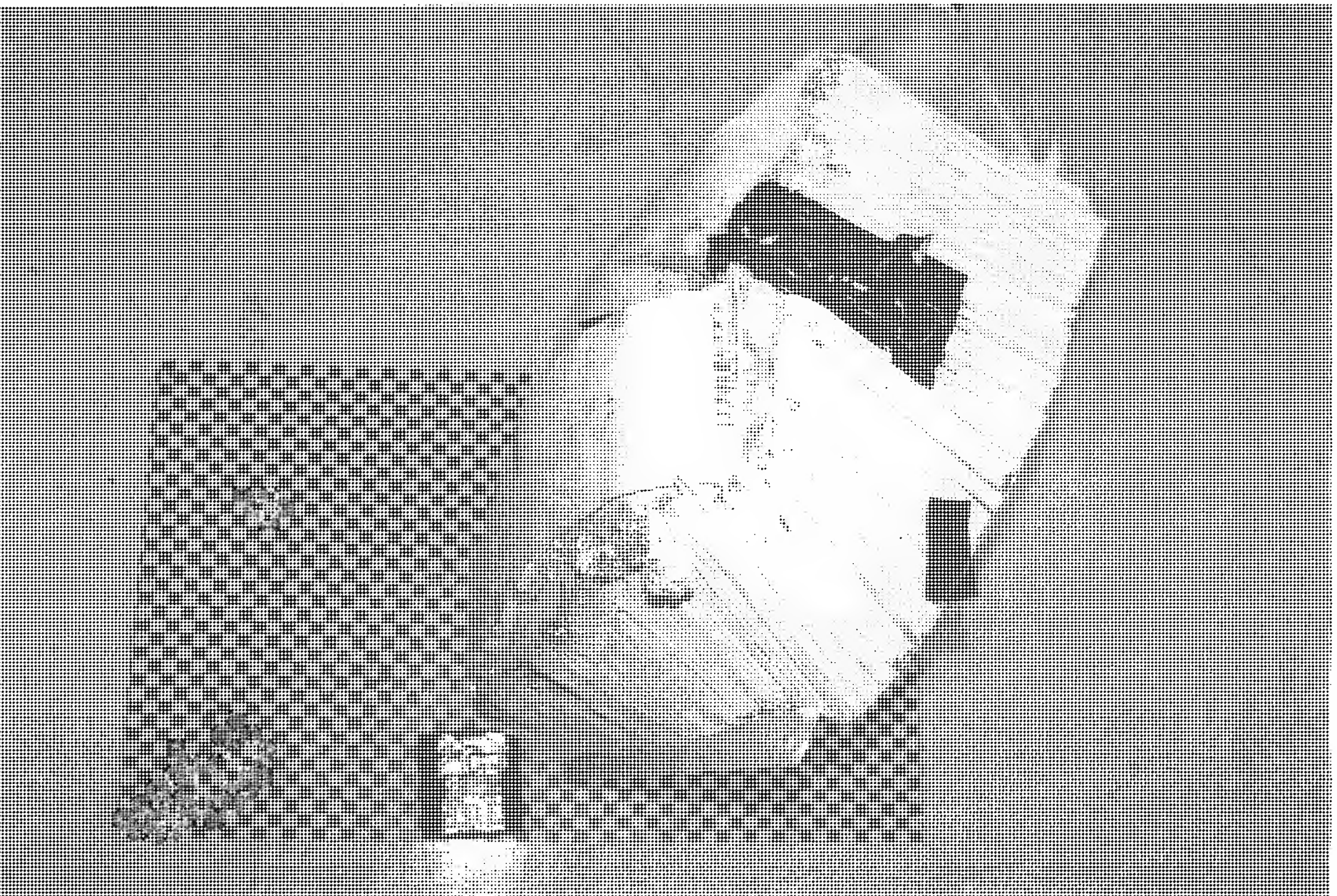


Figure A-19 Post-Test Left Side View of Impactor Face



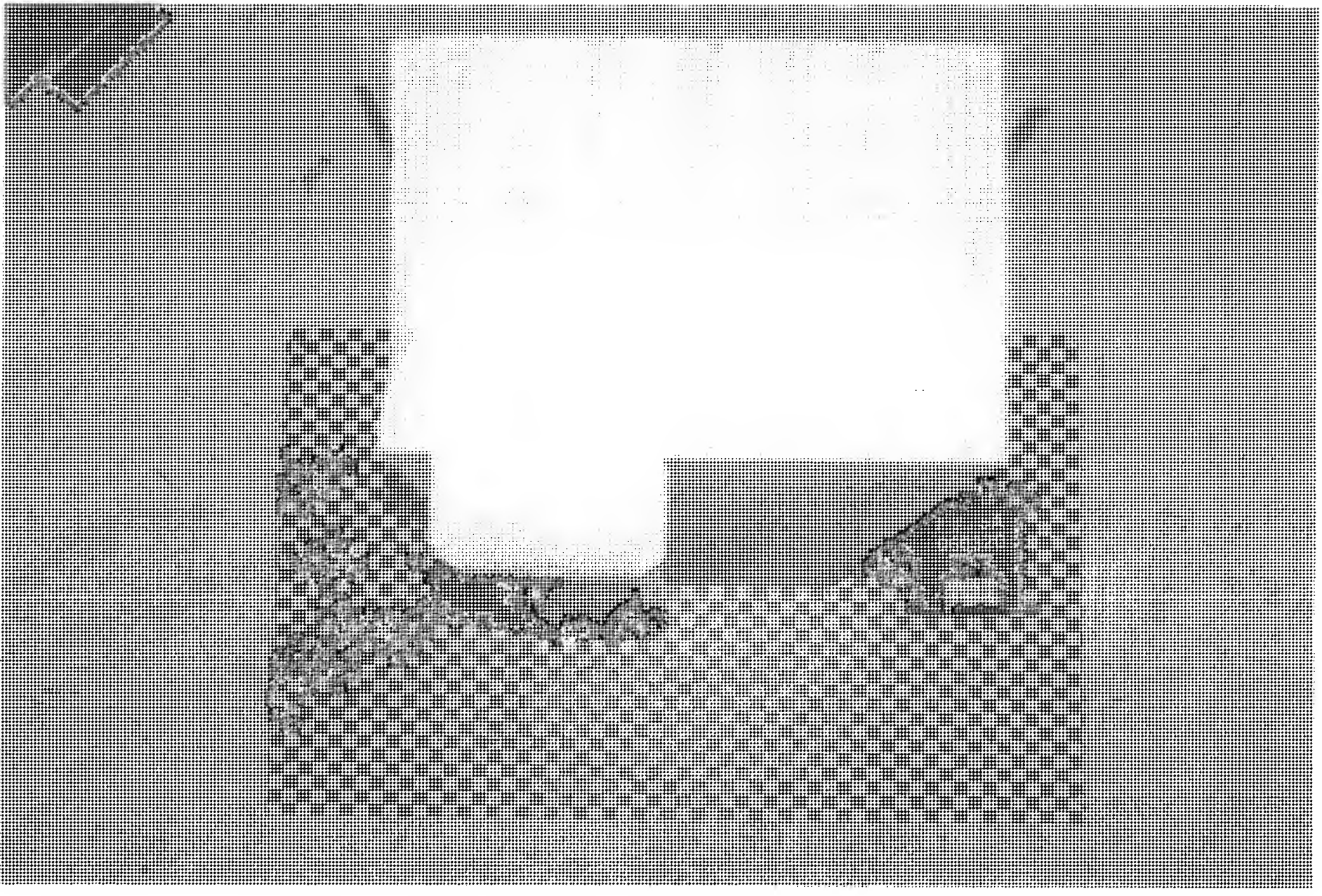


FIGURE A-20 PRO-TESI RIGID SIDE VIEW OF IMPACTOR FACE

A-24

060320

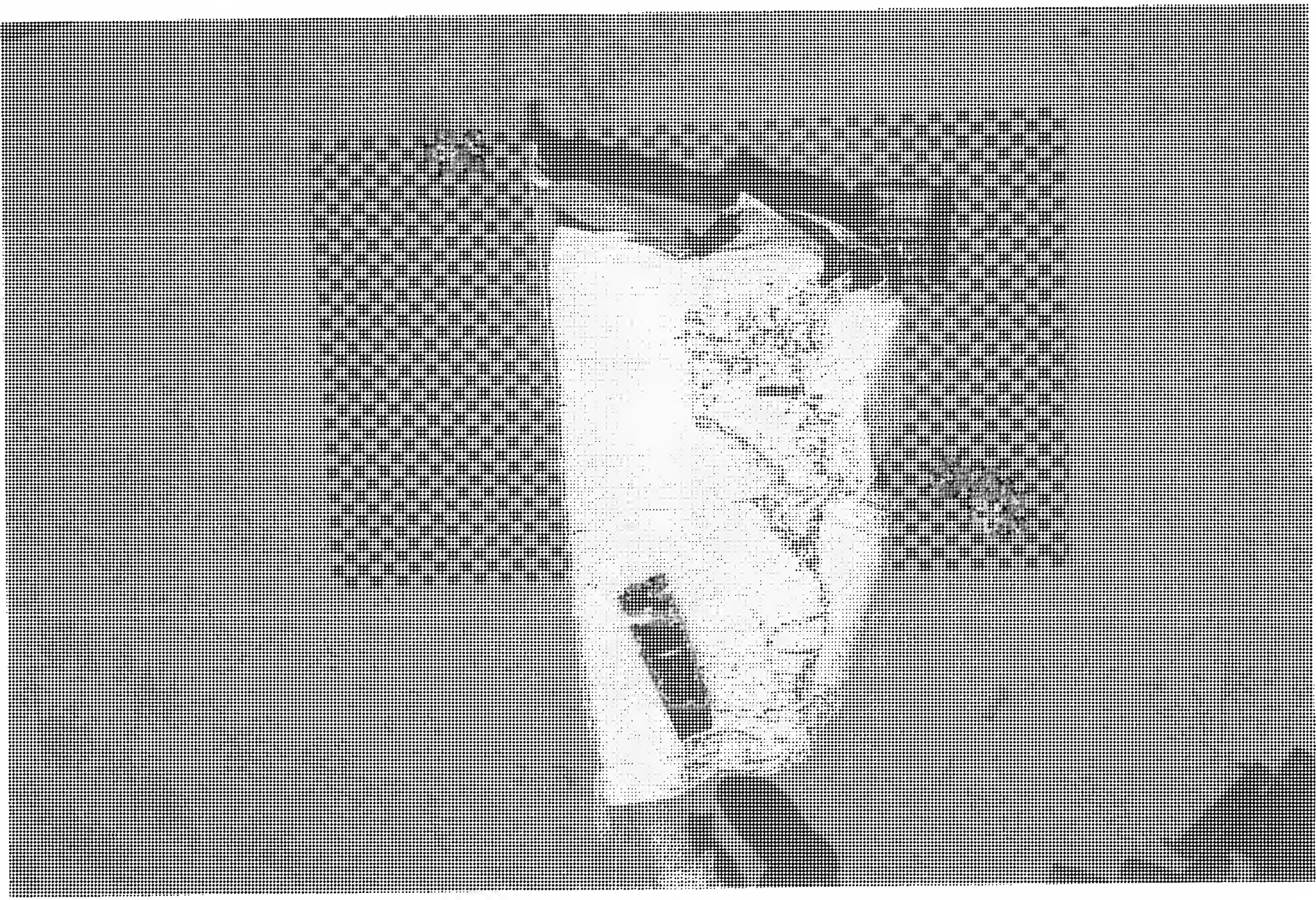


FIGURE A-23 Post-Test Right Side View of Impactor Haze  
A-25

060320



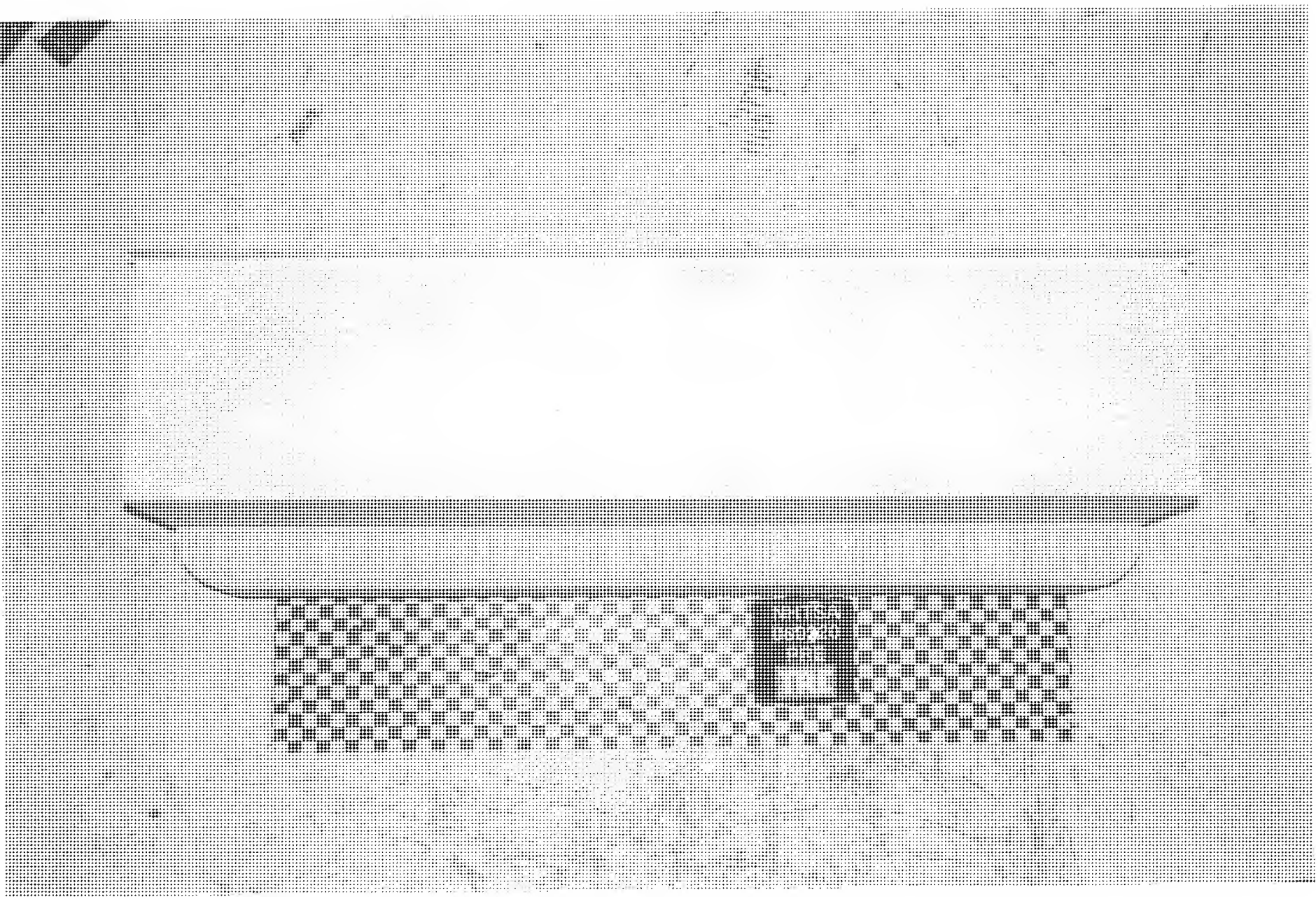


FIGURE A-22 The End View of IMPECTOR PAGE  
A-26

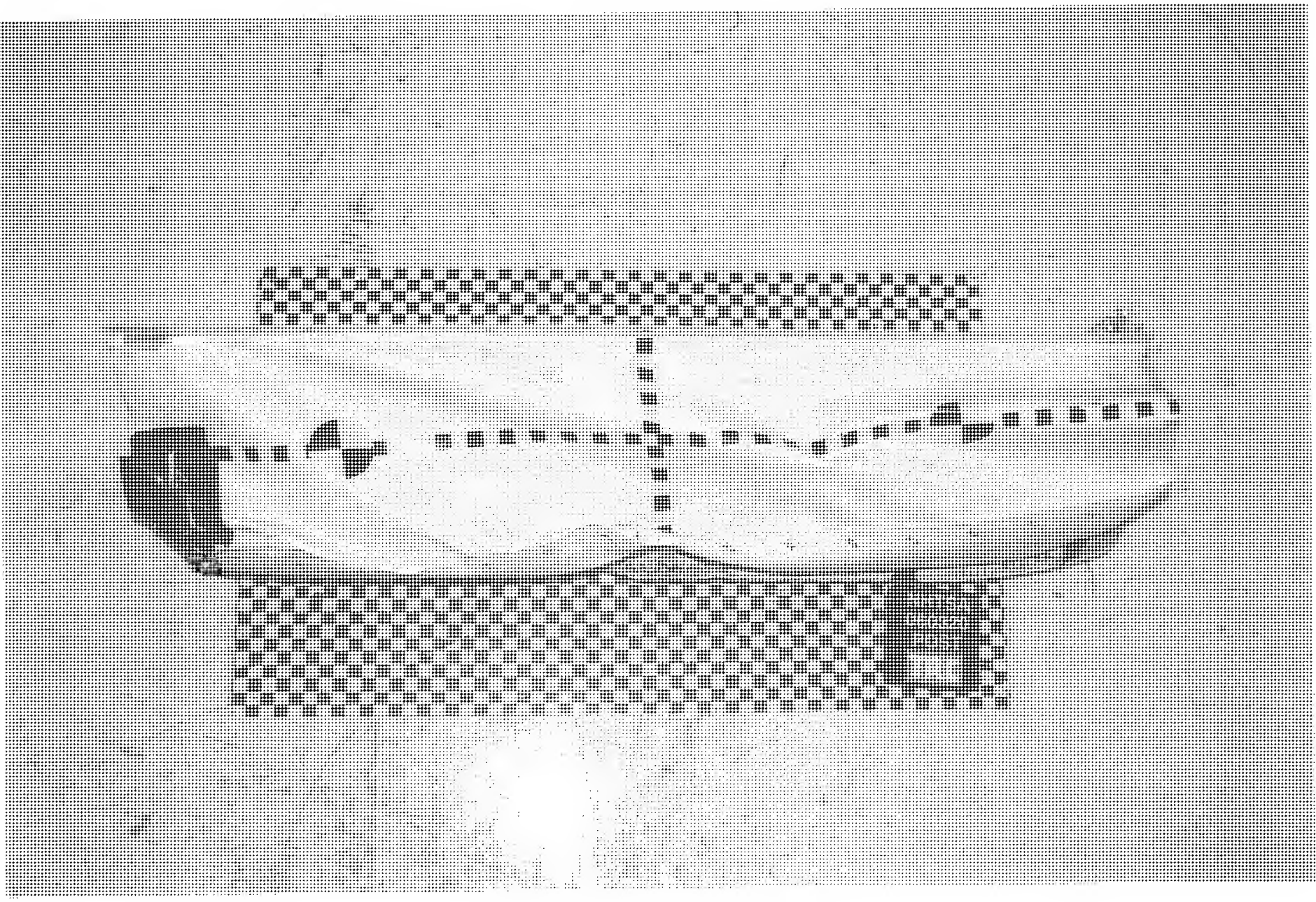


FIGURE A-23 Post-Fire Top View of Impactor Hinge  
A-27



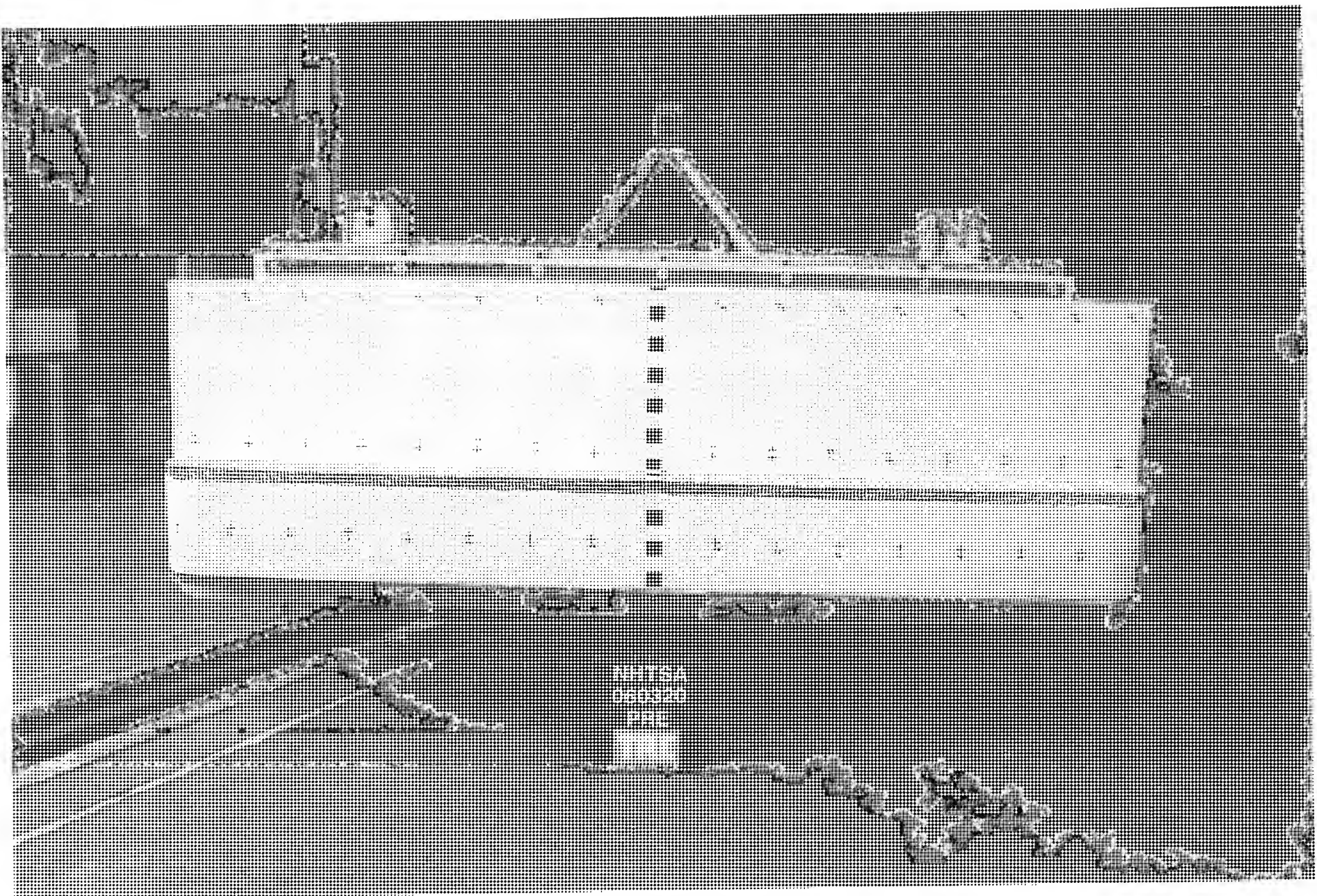


FIGURE A-24 Pre-Test View of Hypersonic

A-28

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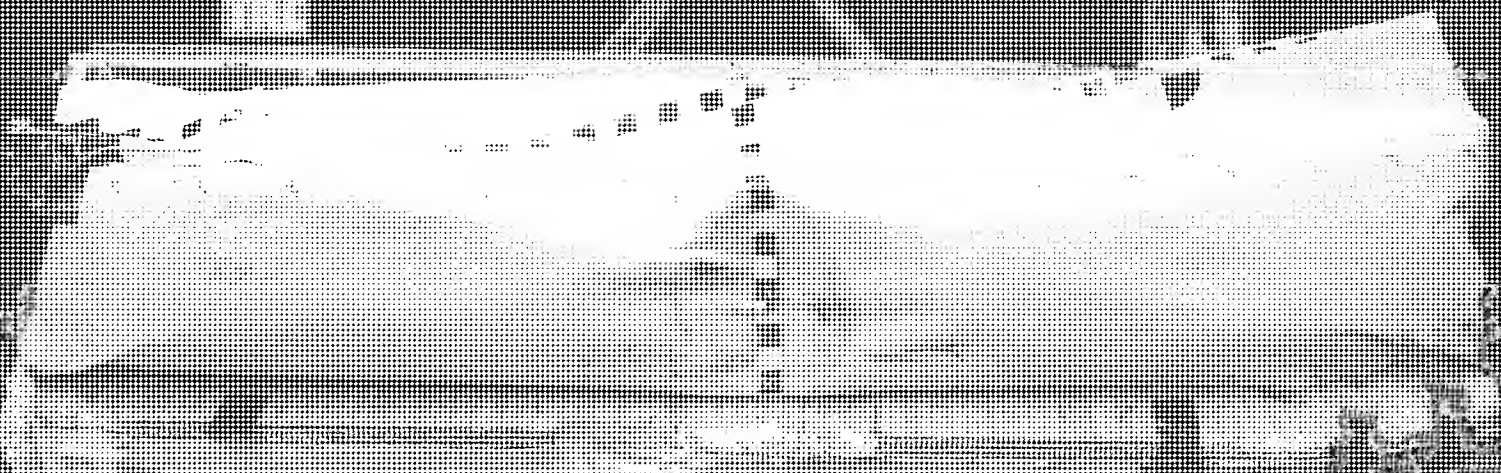


Figure A-25 Post-Ten From View of Impactor



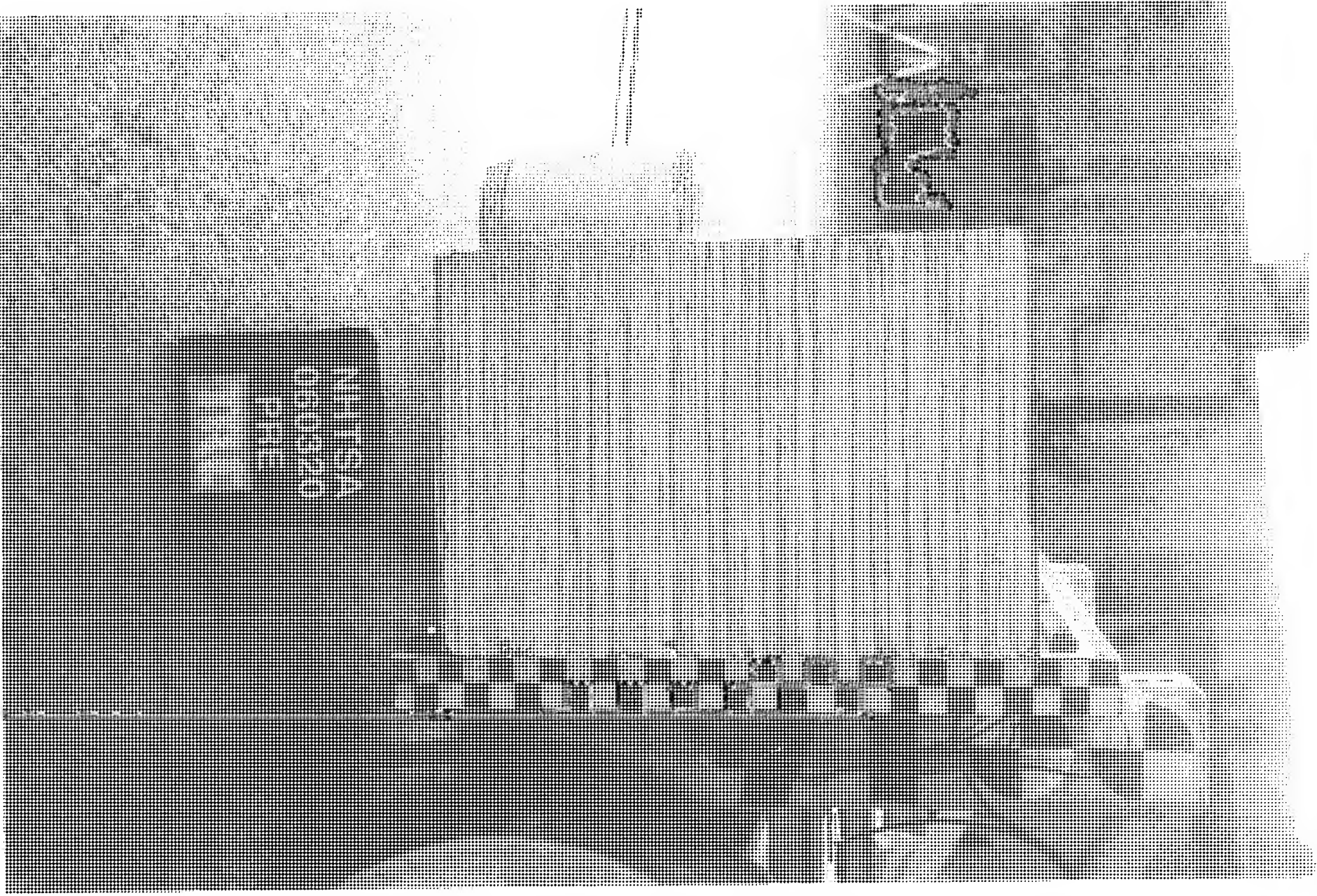


Figure A-26 Pre-Test Left Side View of Impactor  
A-30

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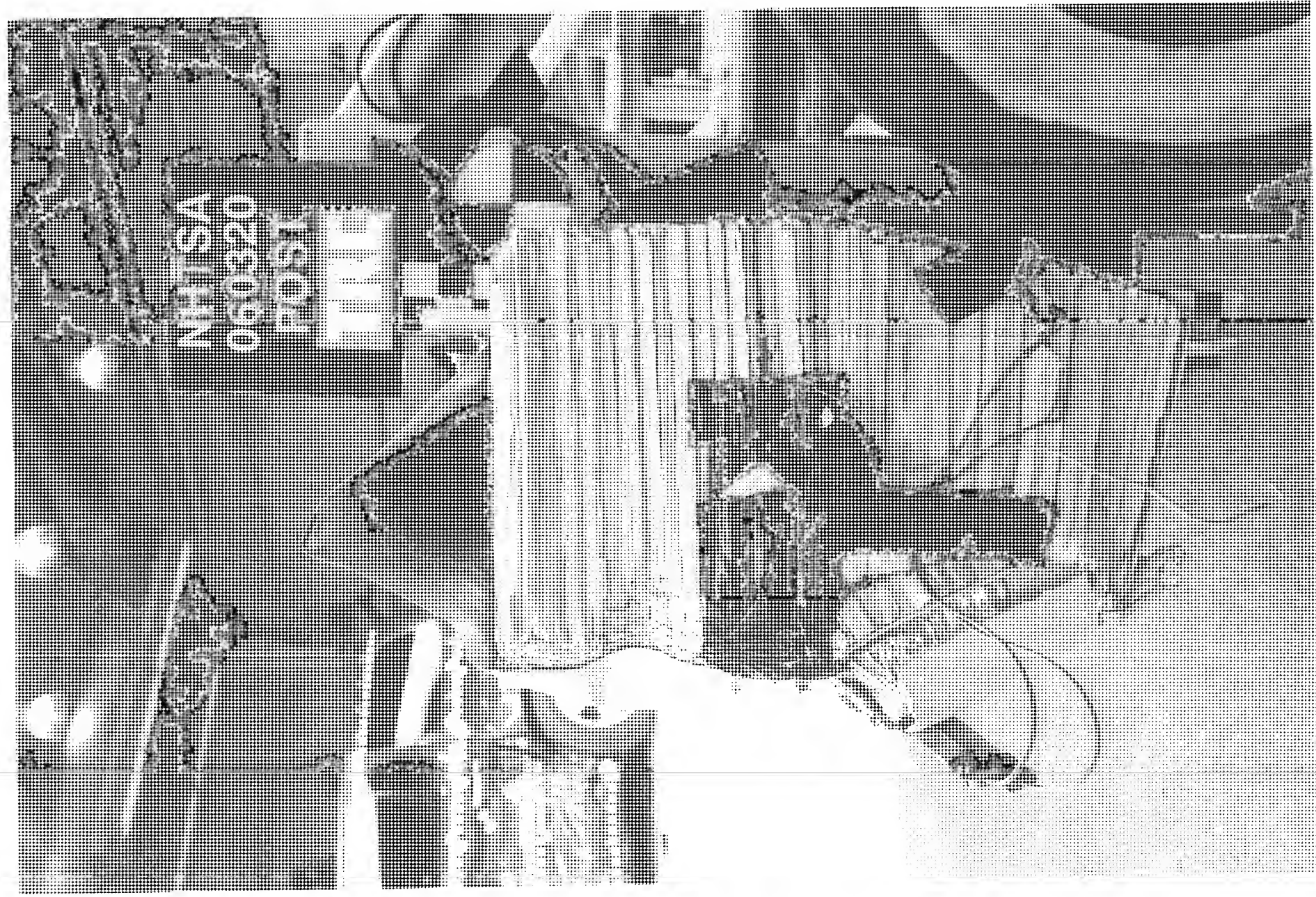


Figure A-27 Post-Test Left Side View of Impactor  
A-31

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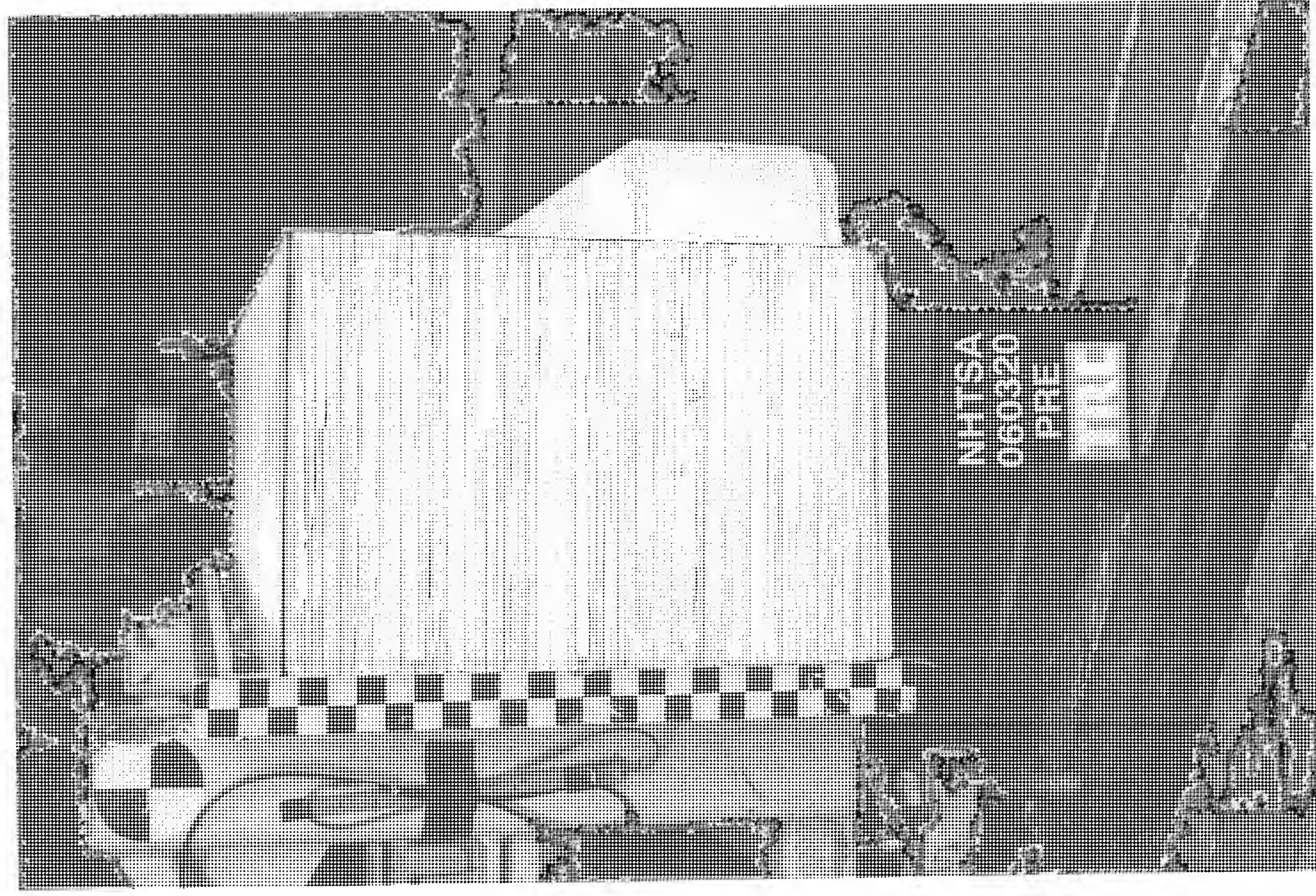
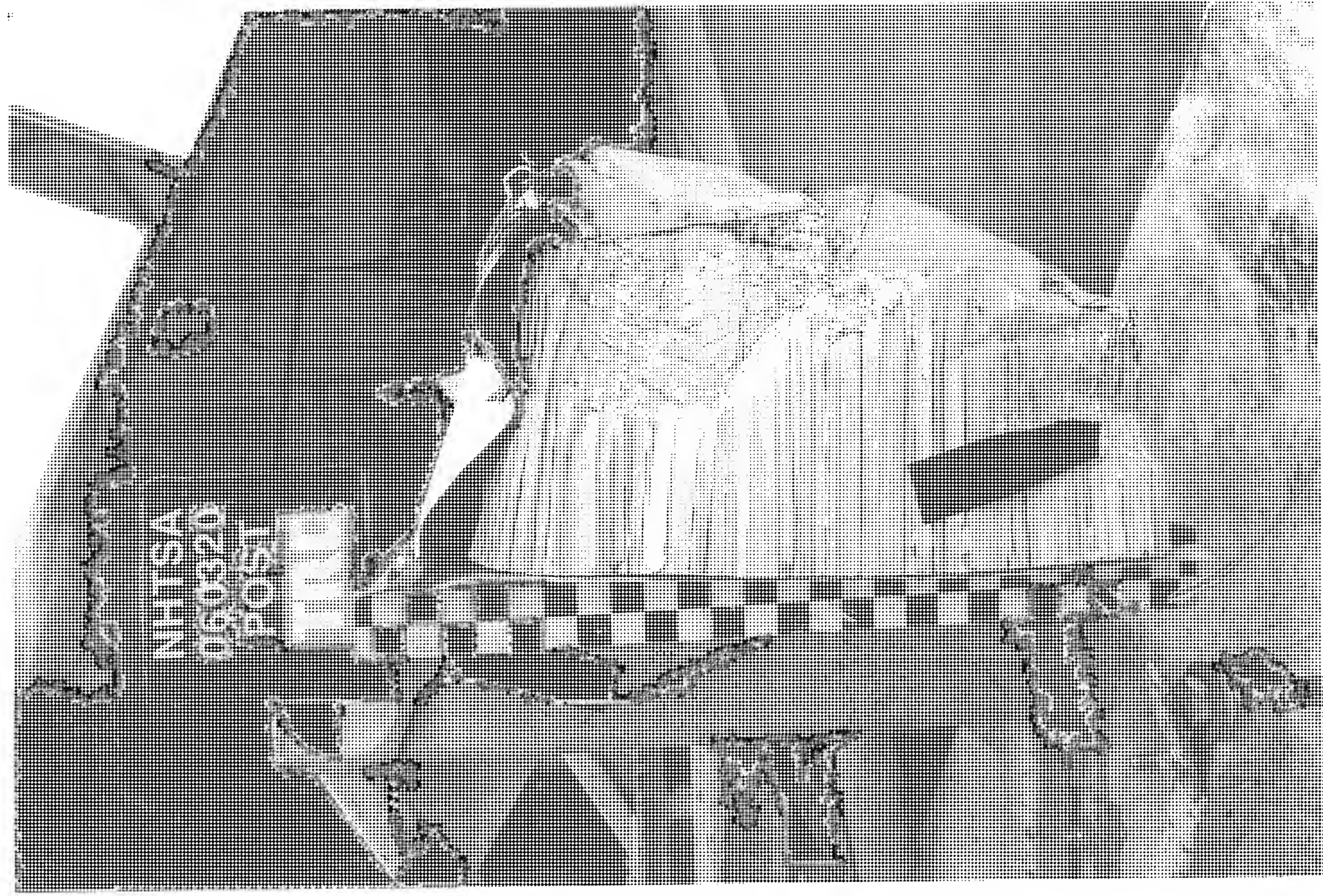


Figure A-28 Pre-Test Right Side View of Impactor  
A-32

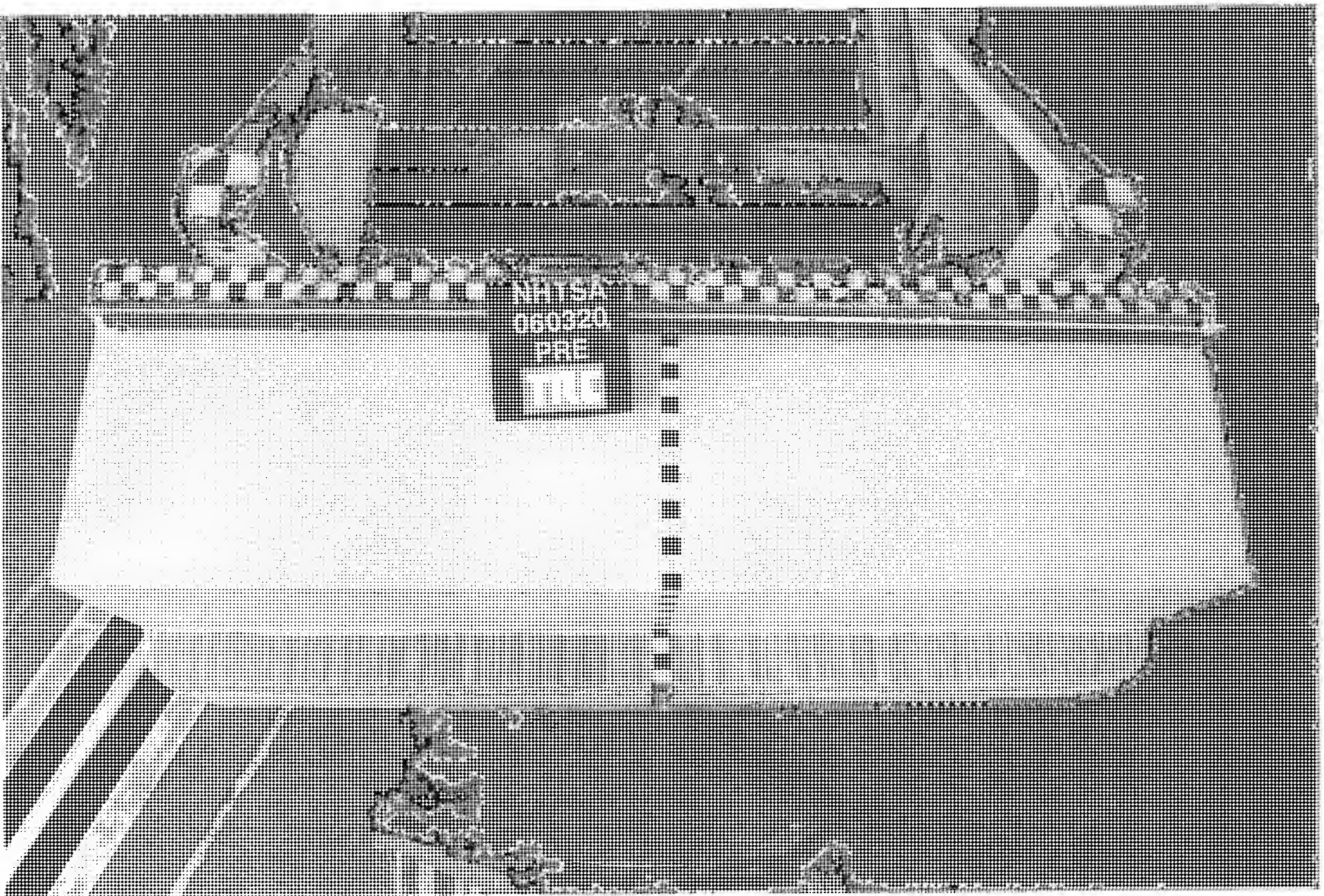
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Figure A-29 Post-Test Right Side View of Impactor  
A-33





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Figure A-30 Pre-Test Top View of Injector  
A-34

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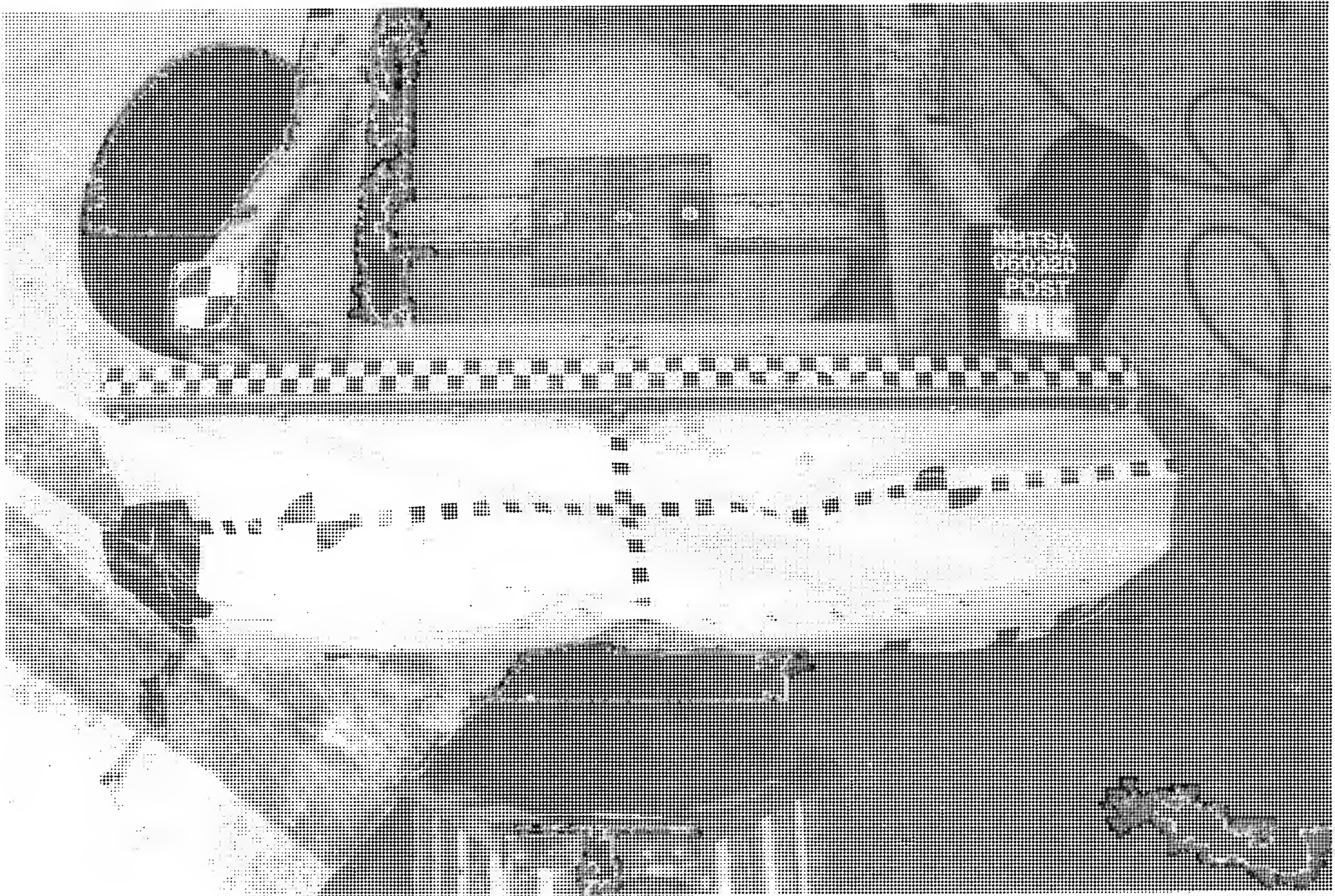


Figure A-31 Post-Test Top View of Impactor  
A-35



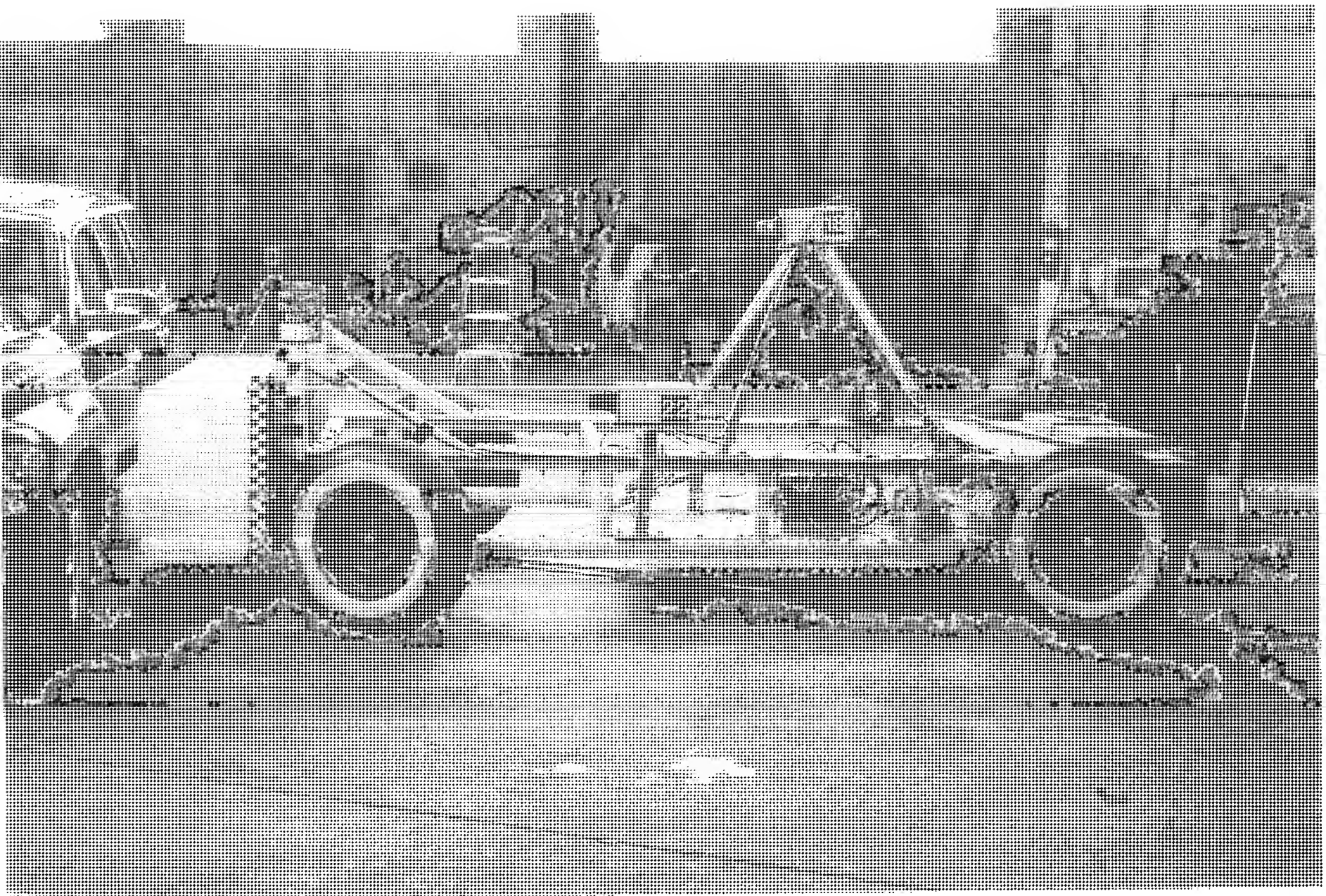


Figure A-12 Pre-Test Left Side Overall View of Impactor  
A-36

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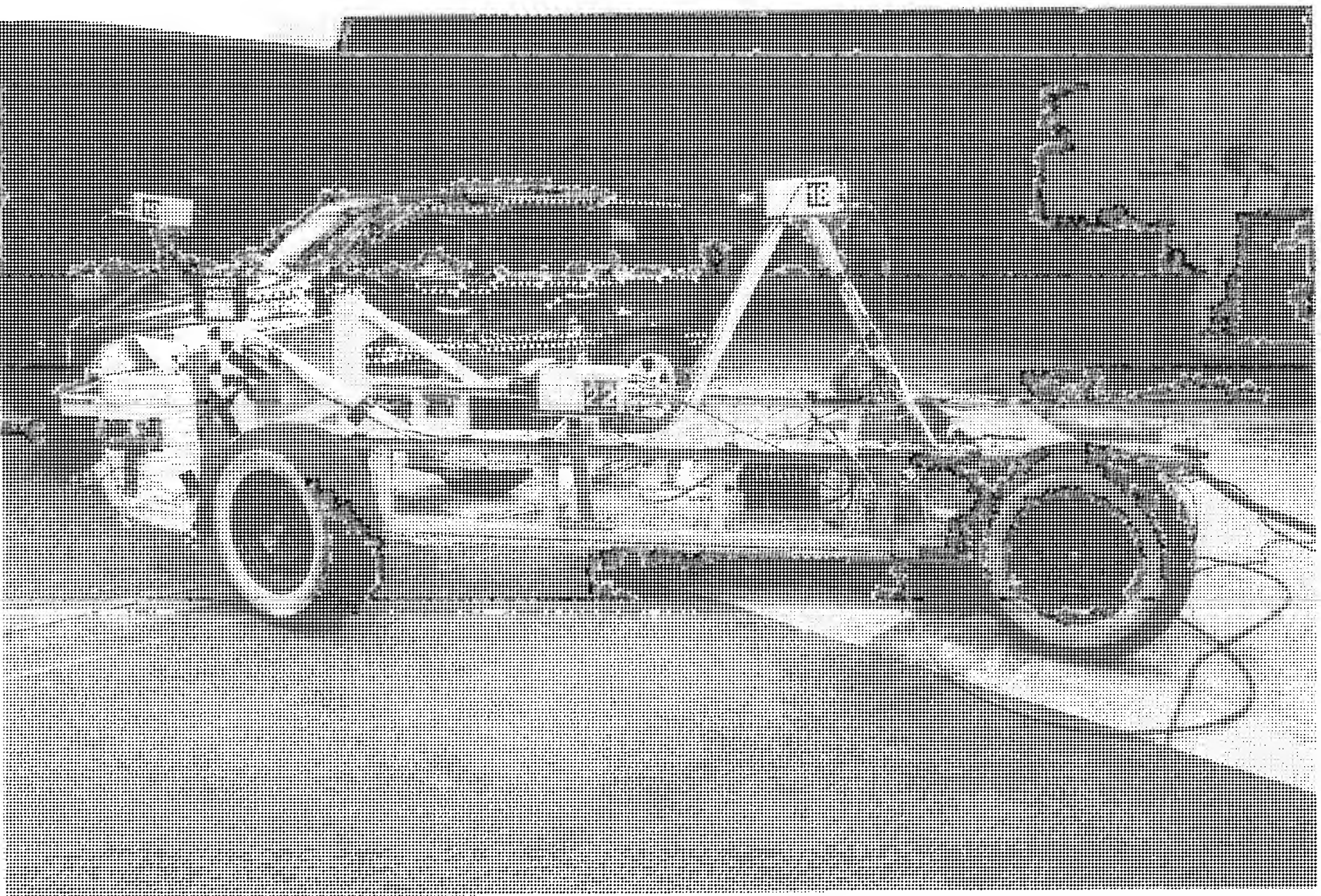


FIGURE A-33 Post-Test Left Side Overall View of Impactor  
A-37

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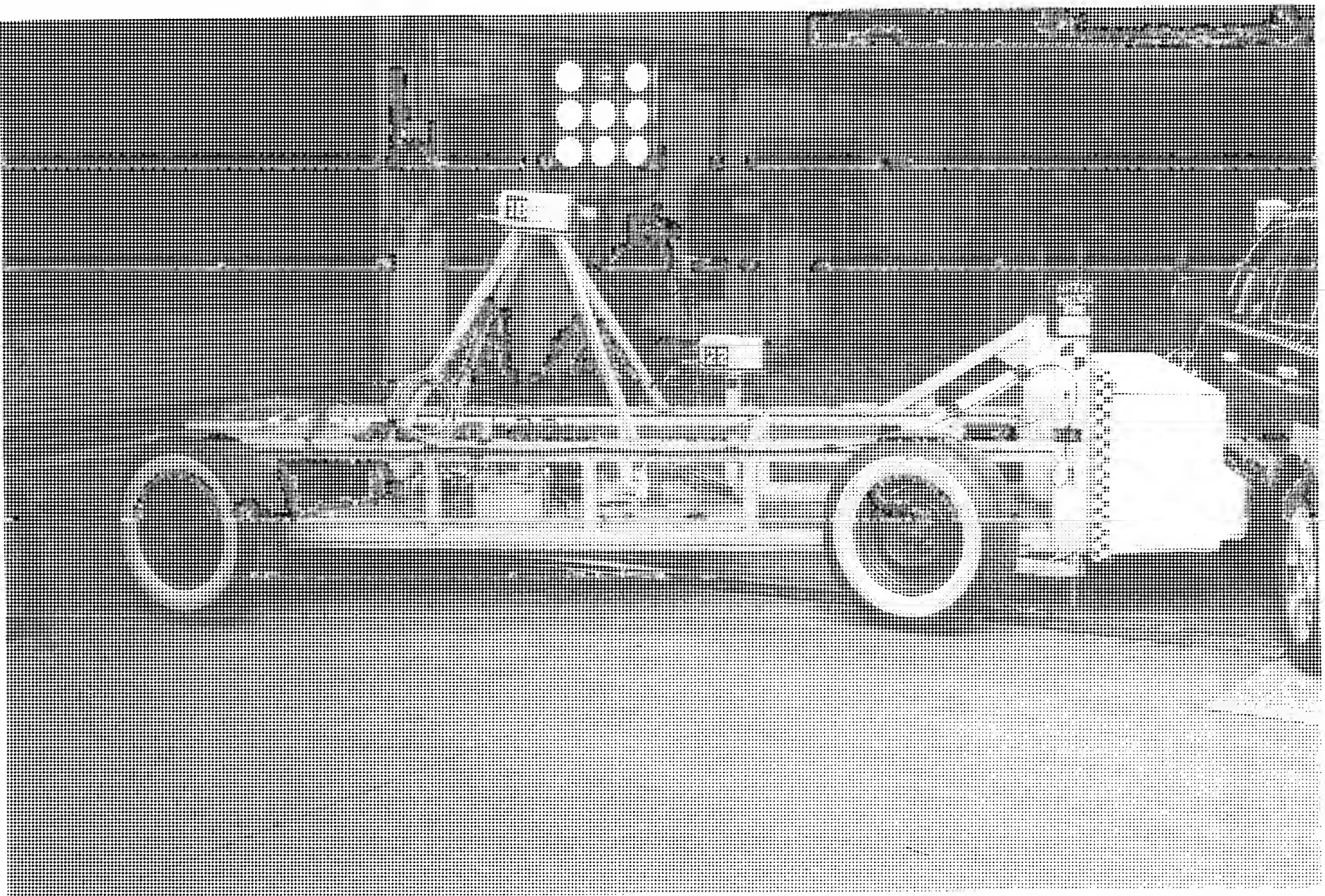


FIGURE A-34 Pre-Test Right Side Overhead View of Impactor  
A-34

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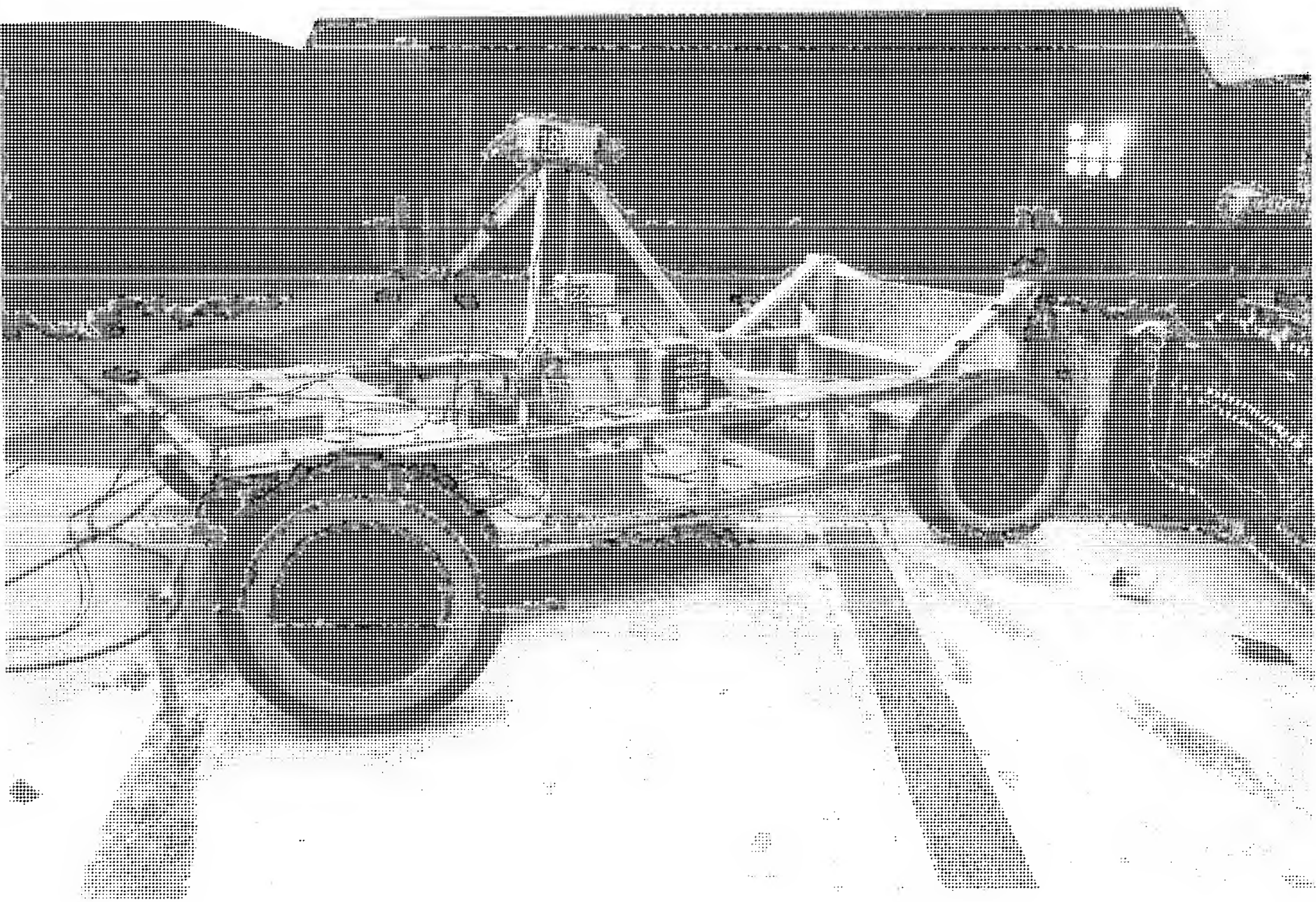


FIGURE A-35 Post-Test Right Side Over-All View of Impactor  
A-39

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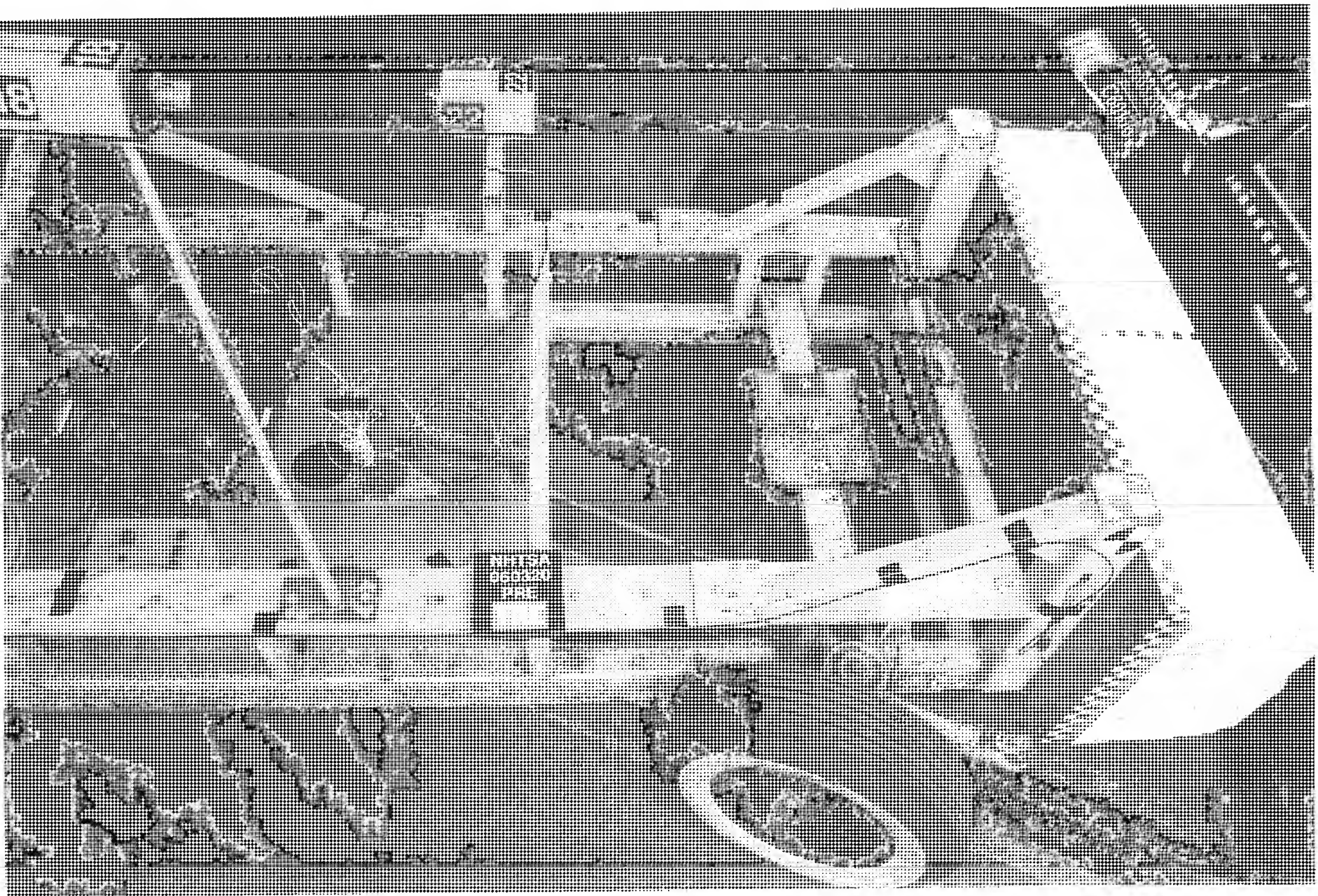


Figure A-36 Pre-Test Top Down View of Impactor  
A-40

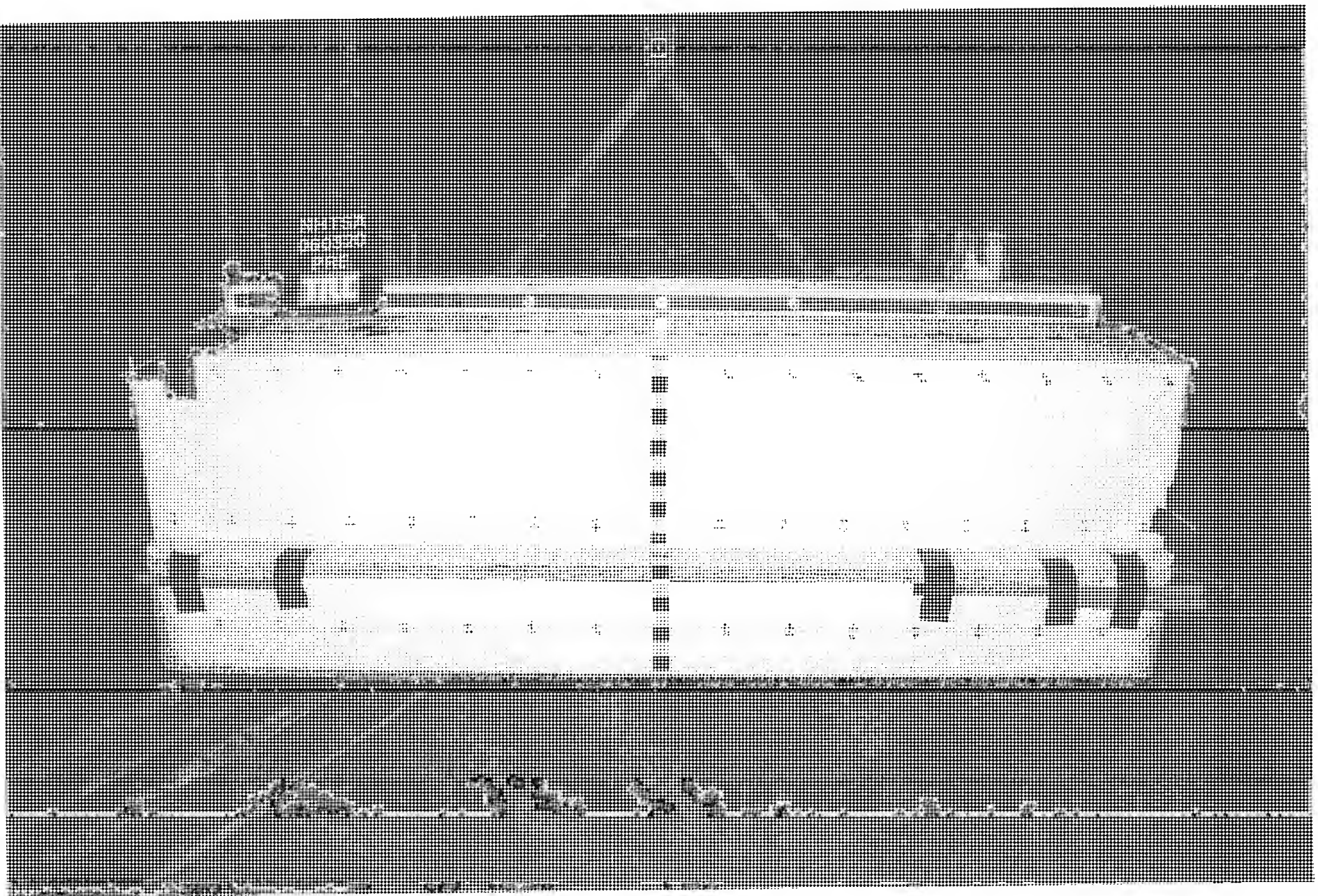


Figure A-37 Pre-Test View of RDB Showing Contact Switches in Place  
A-41

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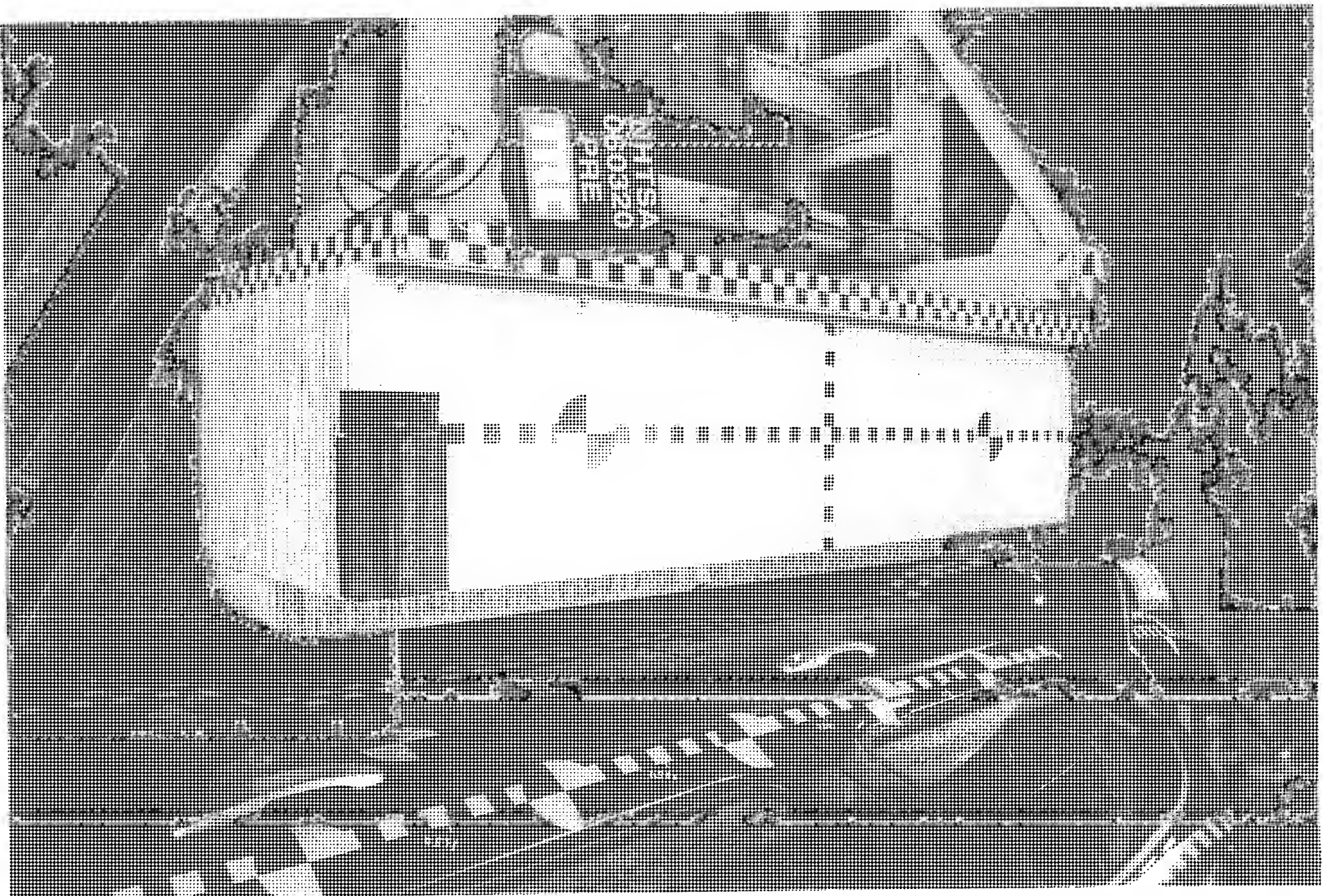


Figure A-38 Pre-Test Overhead View of MDPB Aligned with Vehicle  
A-42

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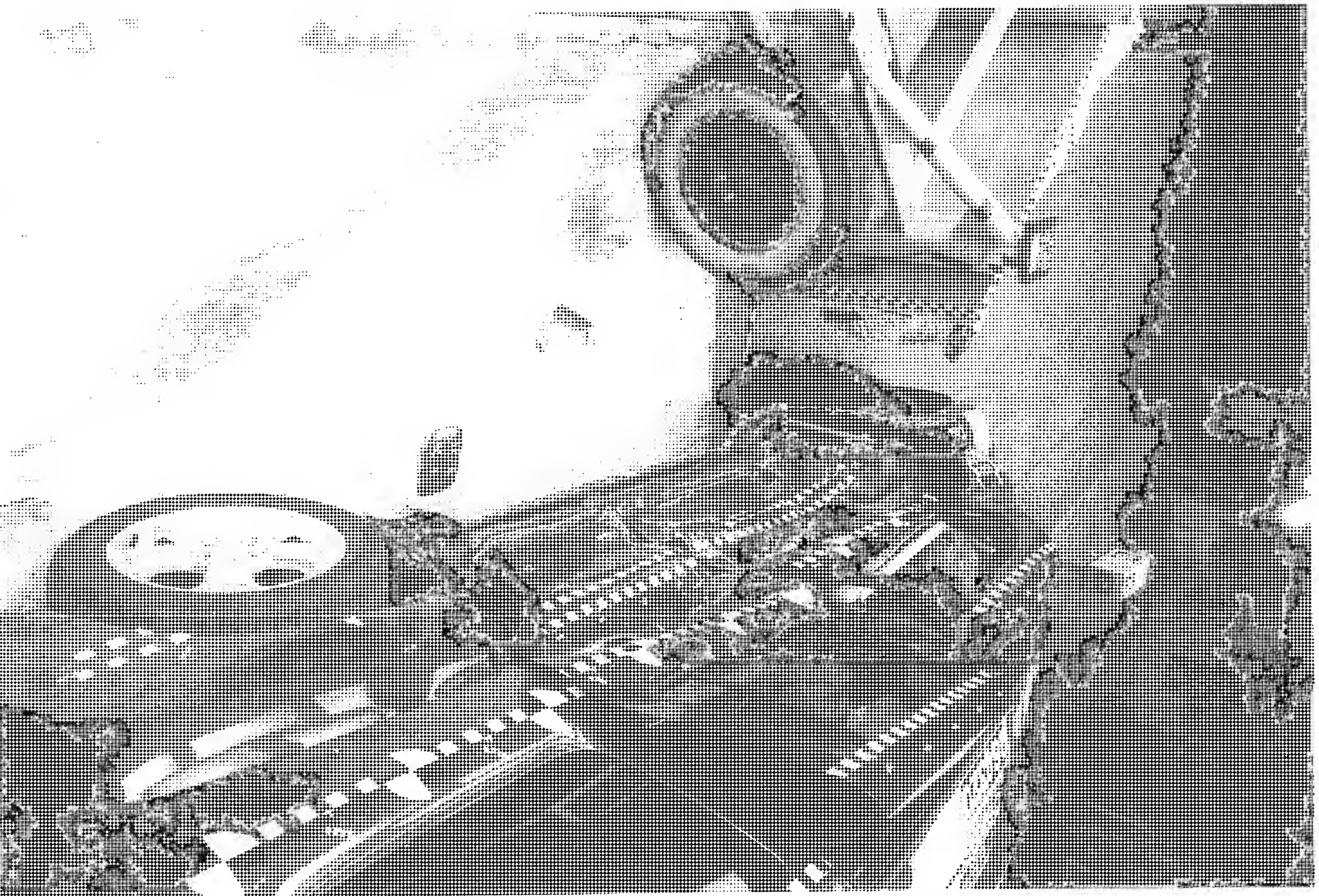


FIGURE A-39 Front-View Overhead View of WJCB and Vehicle  
A-43

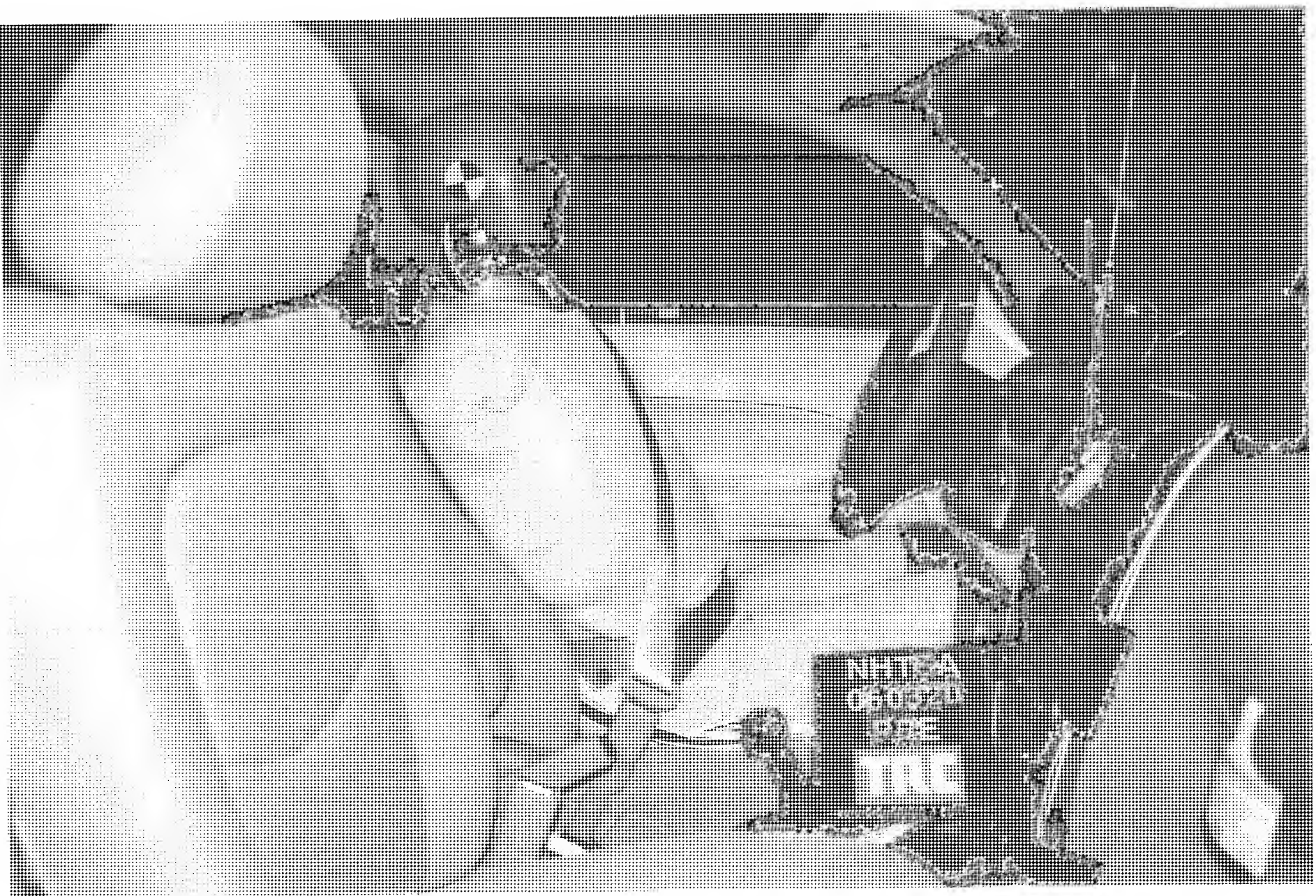


Figure A-44 Pre-Test High-Contrast View of Hull and Superstructure

A-44

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FIGURE A-41 POST-TEST RIGHT OCCUPANT COMPARTMENT VIEW OF HYDRA SID III

A-45

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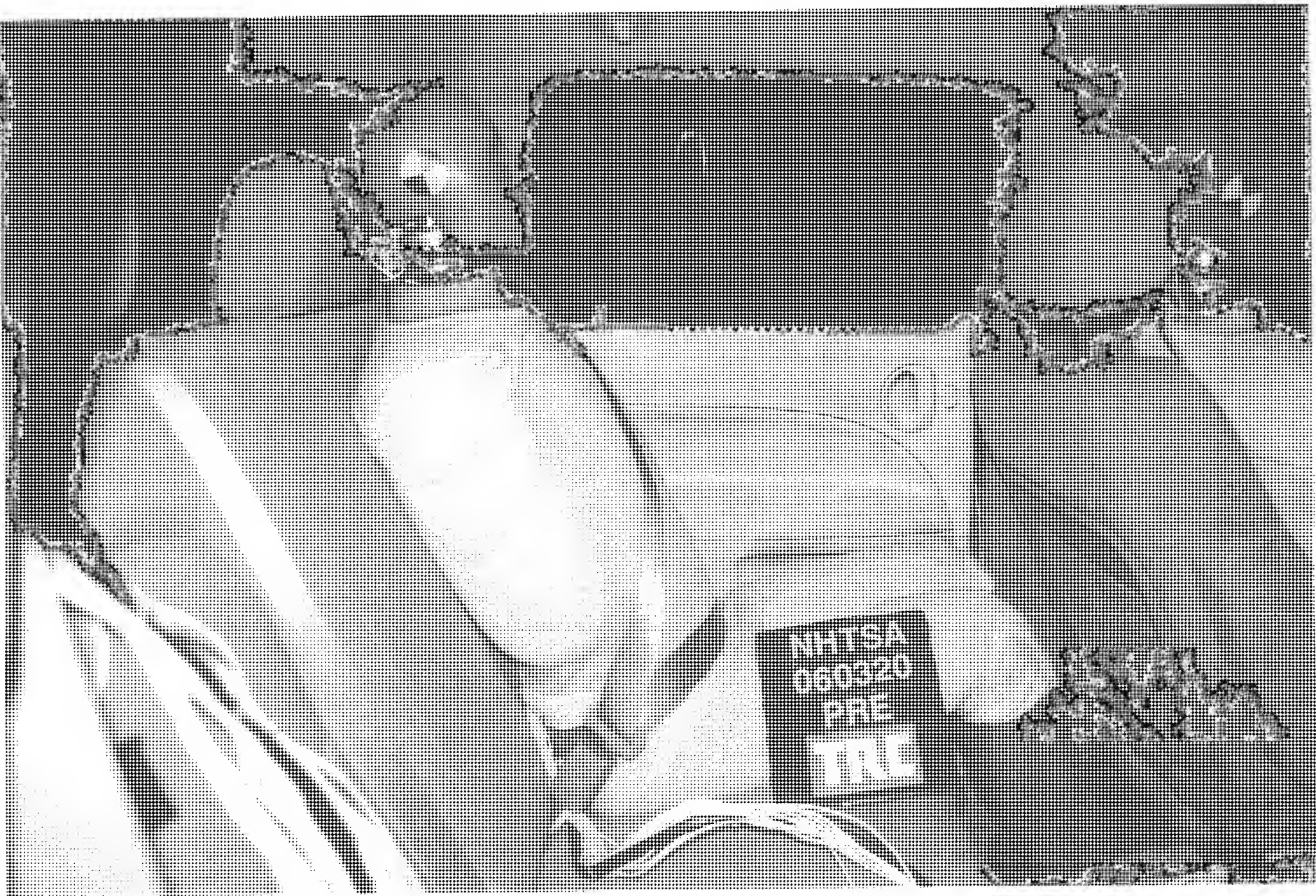


FIGURE A-42 Pre-Test High Speed Overboard Compartment View of Rear Ship Hull

A-46

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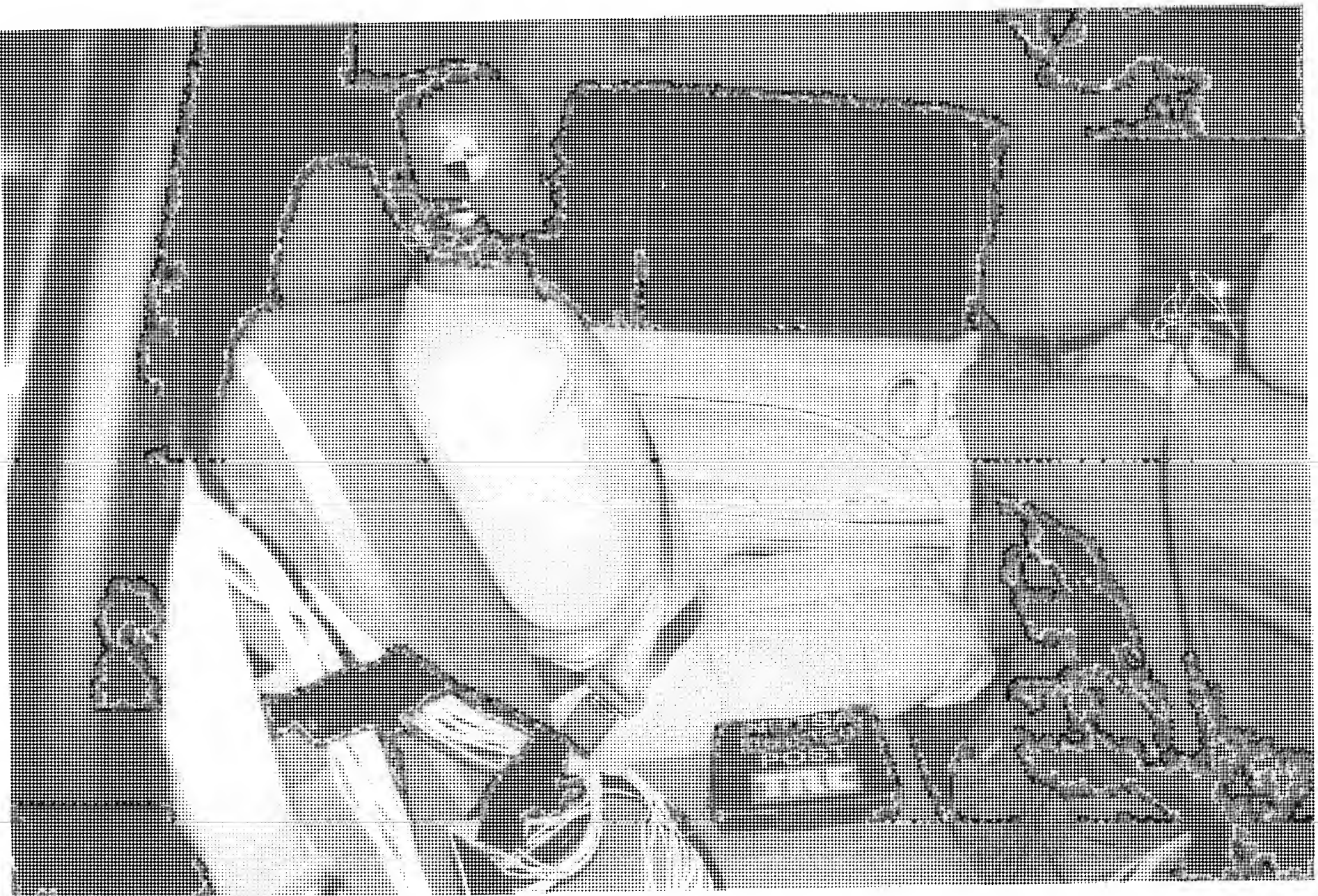


FIGURE A-63 First-Hand Right Occupant Compartment View of Rear SHD III  
A-47

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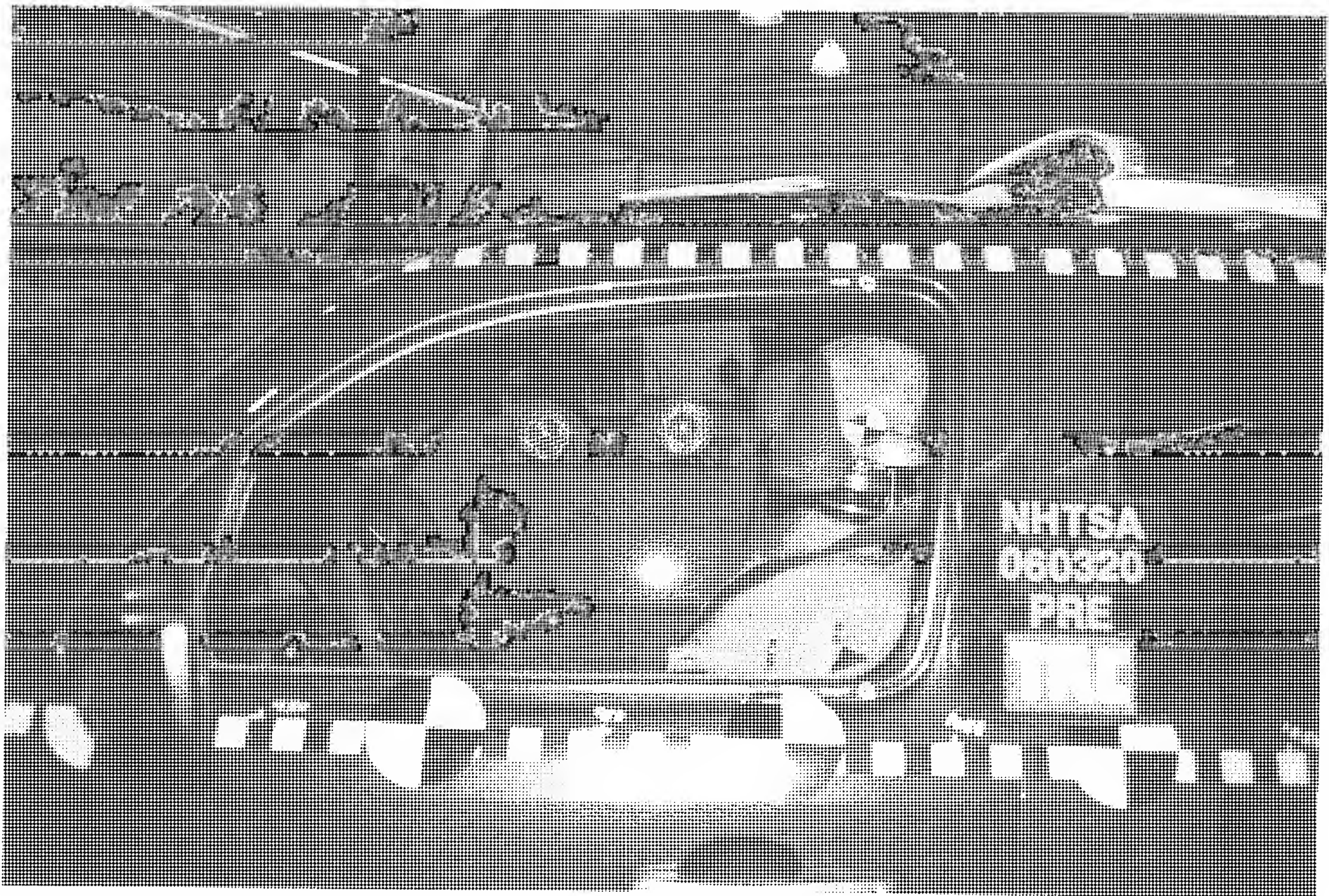


Figure A-44 Pre-Time Left View of Front SLD IIII



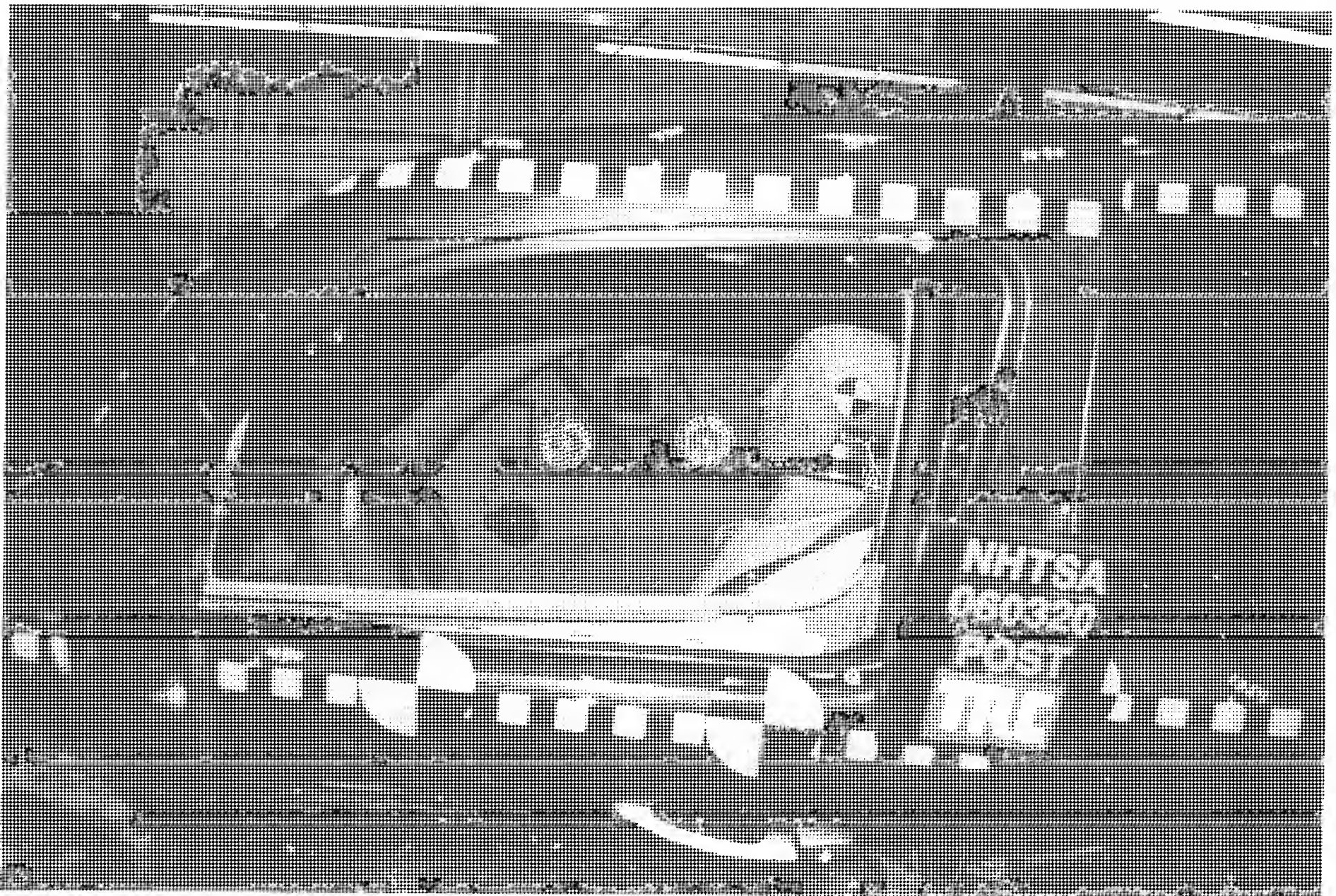


Figure A-45 Post-Test Left View of From SID H111

A-45

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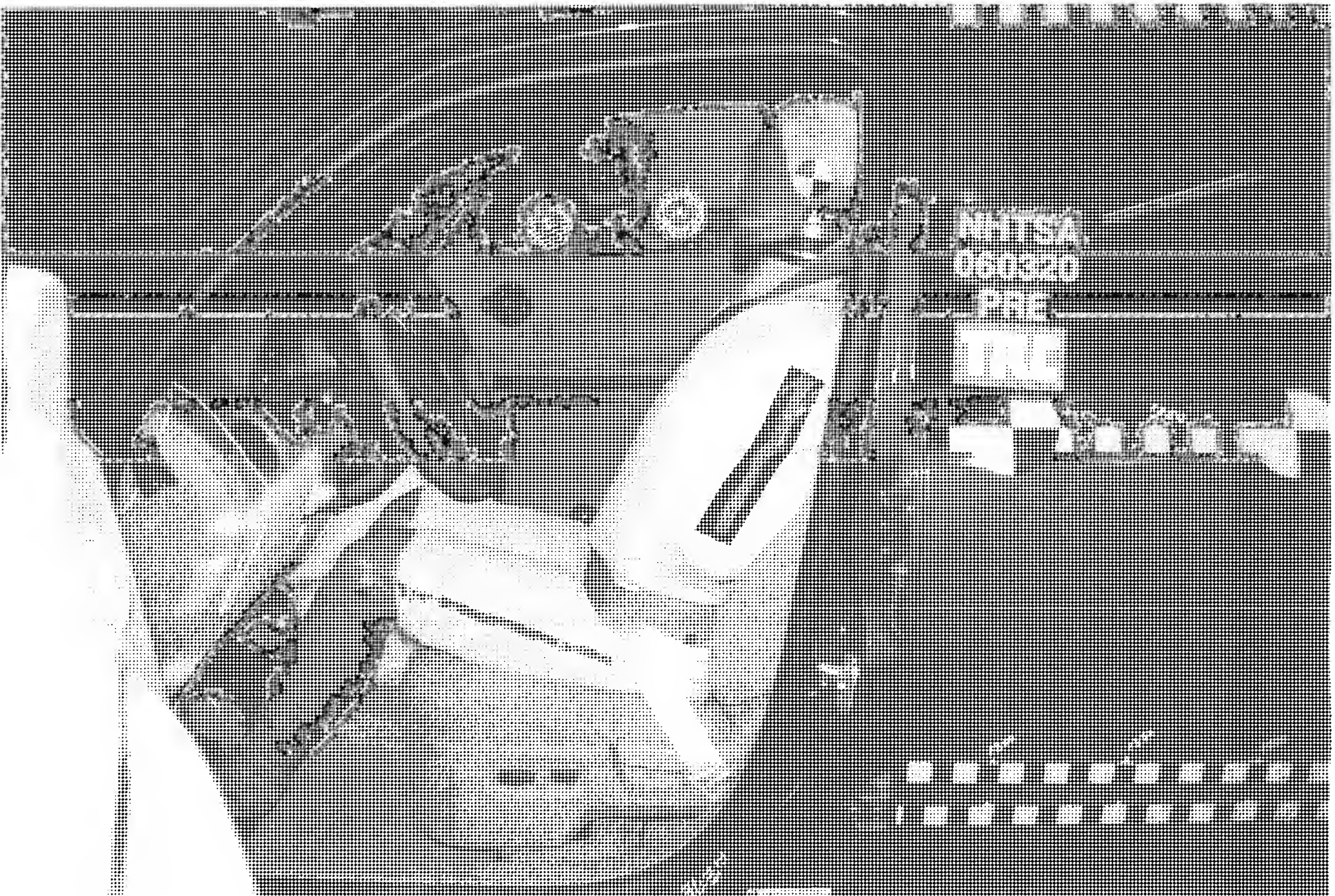


Figure A-46 Pre-Test Left View of Prop SID IIII and Jale Position

A-50

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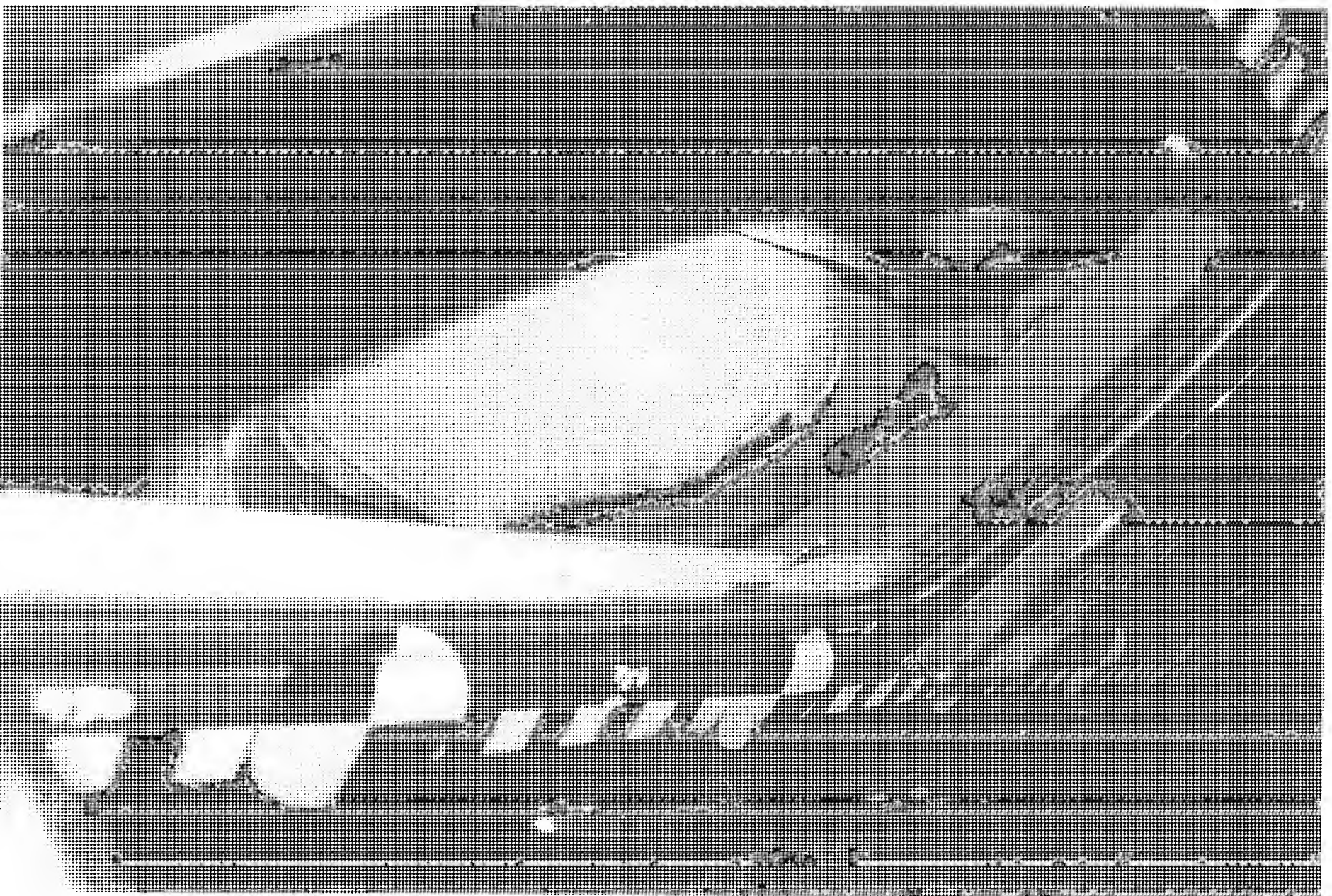


Figure A-47 170° East View of From SID Hill and Door Clearance



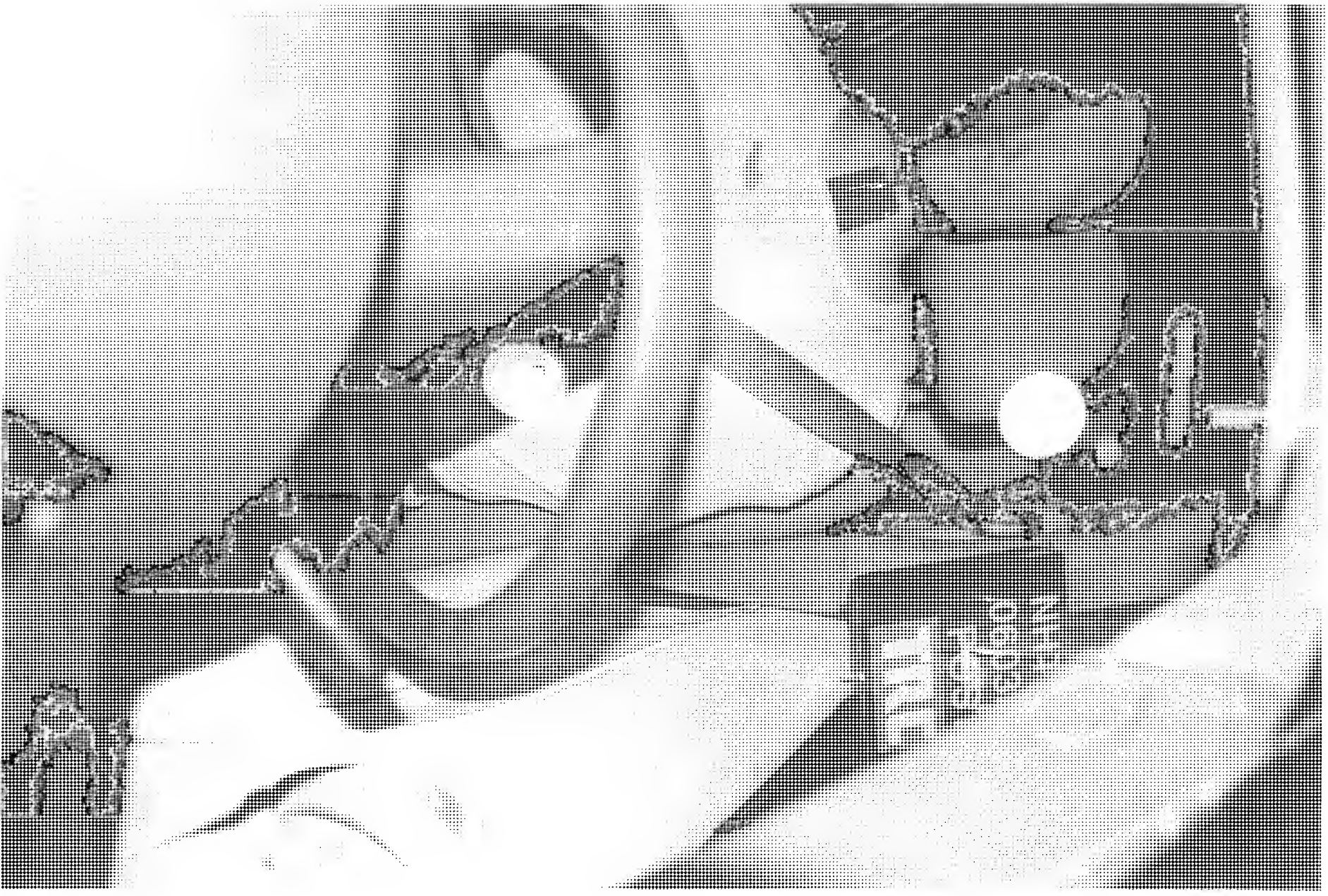


Figure A-48 Post-Test Left View of Bomb Side Hill and Door Clearance

A-52

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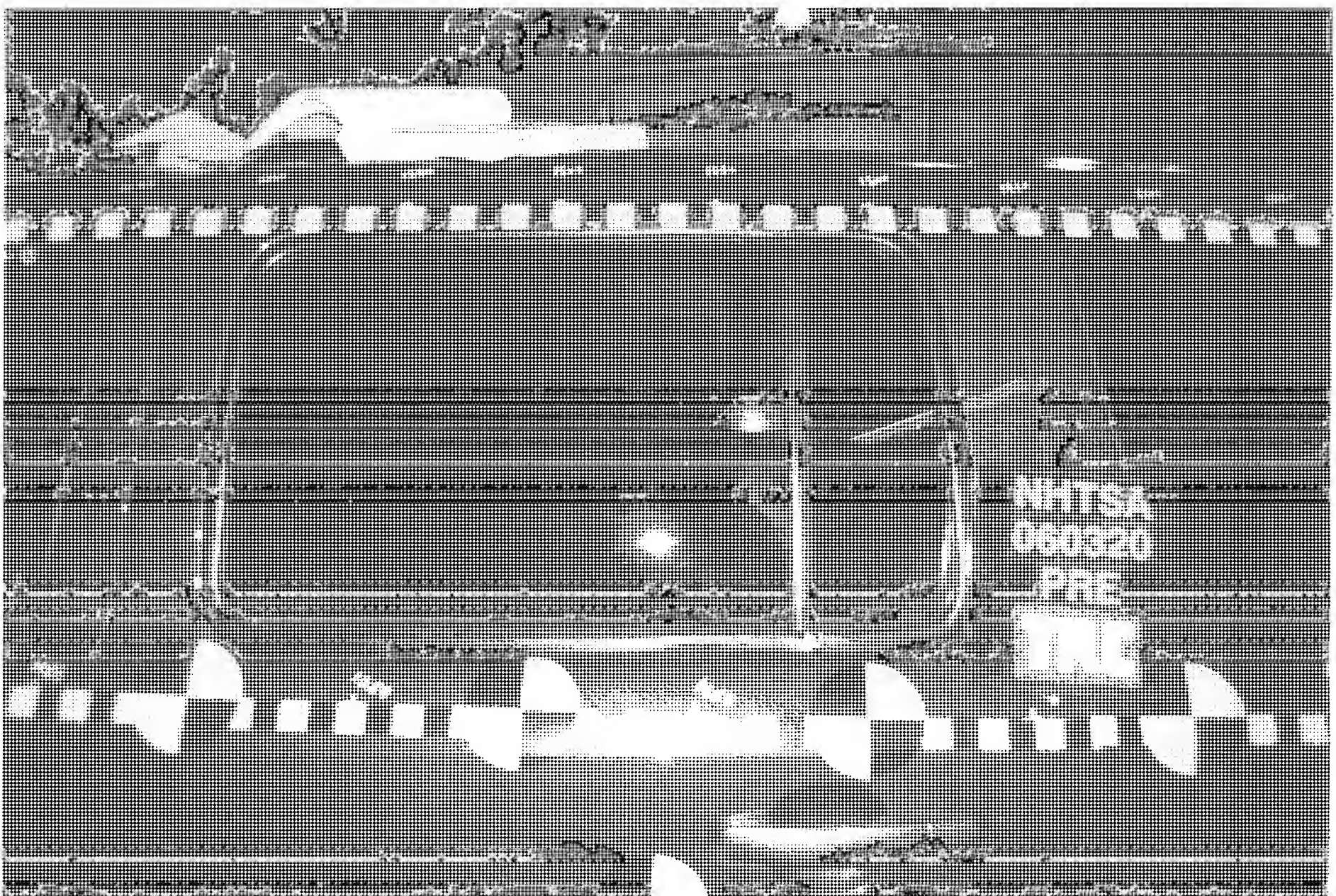


Figure A-49 Pre-Ten Left View of Rear Side Hill

A-53

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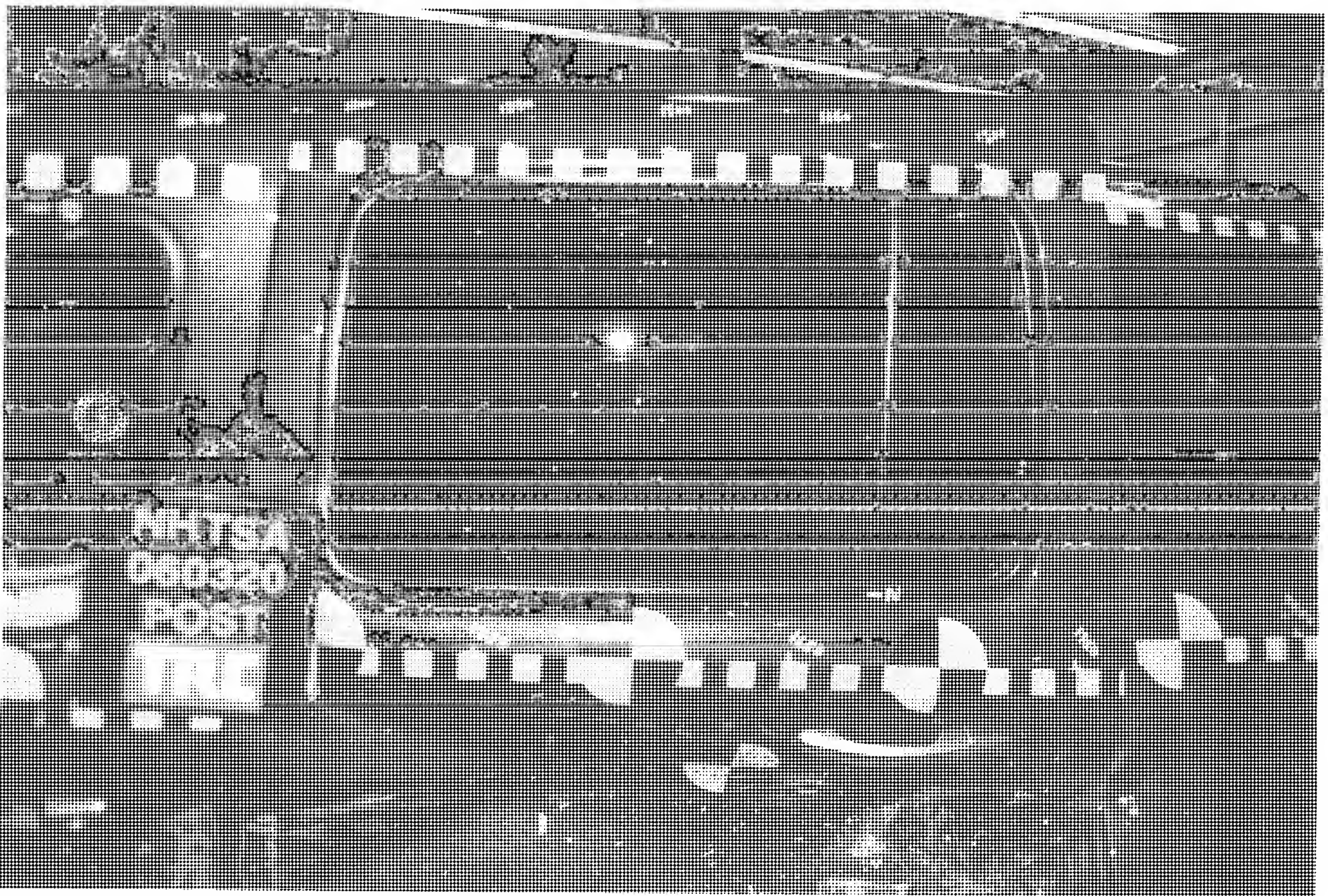
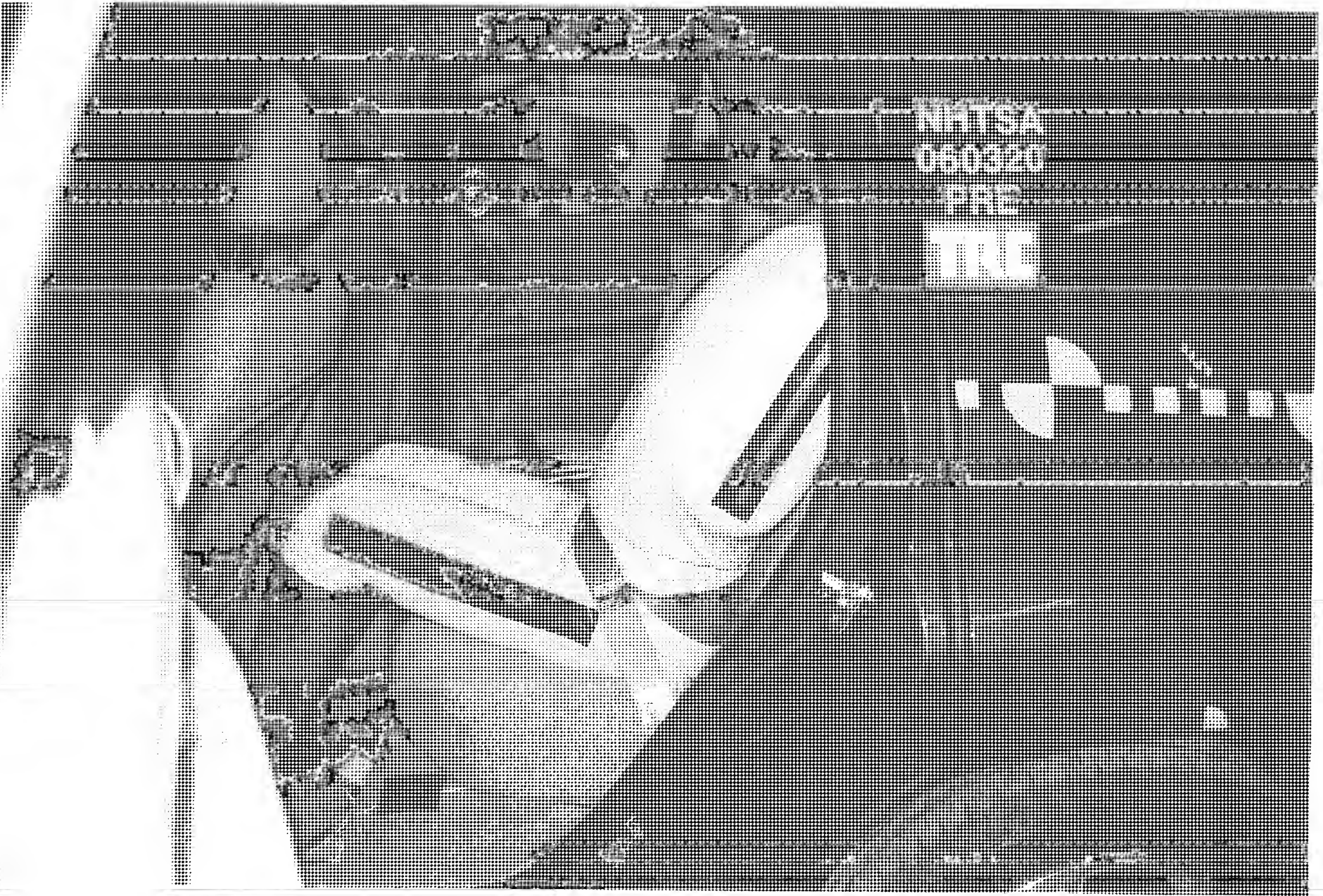


FIGURE A-53 Post-Ten Left View of Rear Ship Hull

A-54

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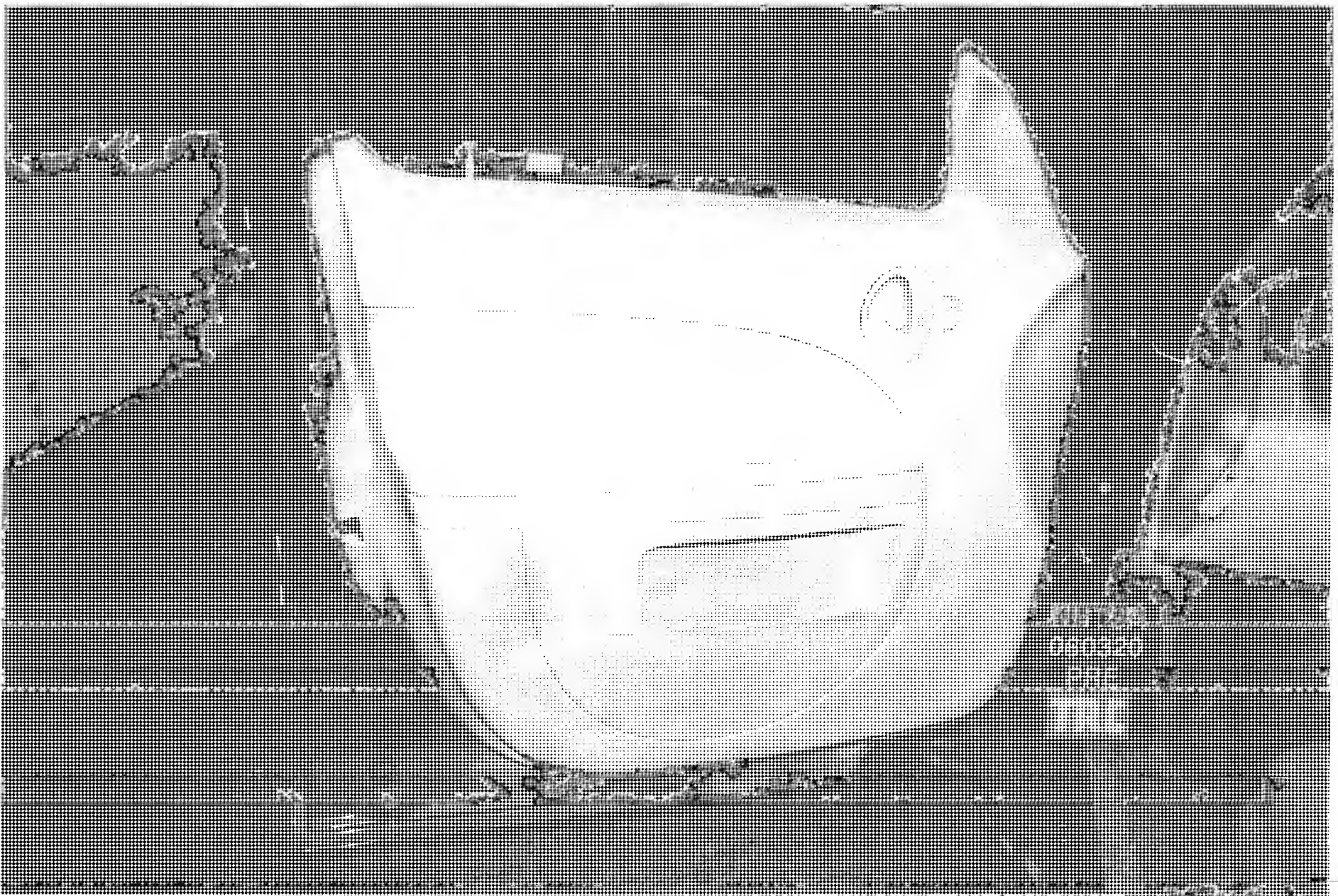


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FIGURE A-51 Pre-Test Left of Rear SHD IIIII and IIII Position

A-55

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Figure A-52 Pre-Test Interior of Front Door

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FIGURE A-53 FRONT-VIEW INTERIOR OF FRONT HOOF SHOWING SID HILL IMPACT LOCATIONS  
A-57

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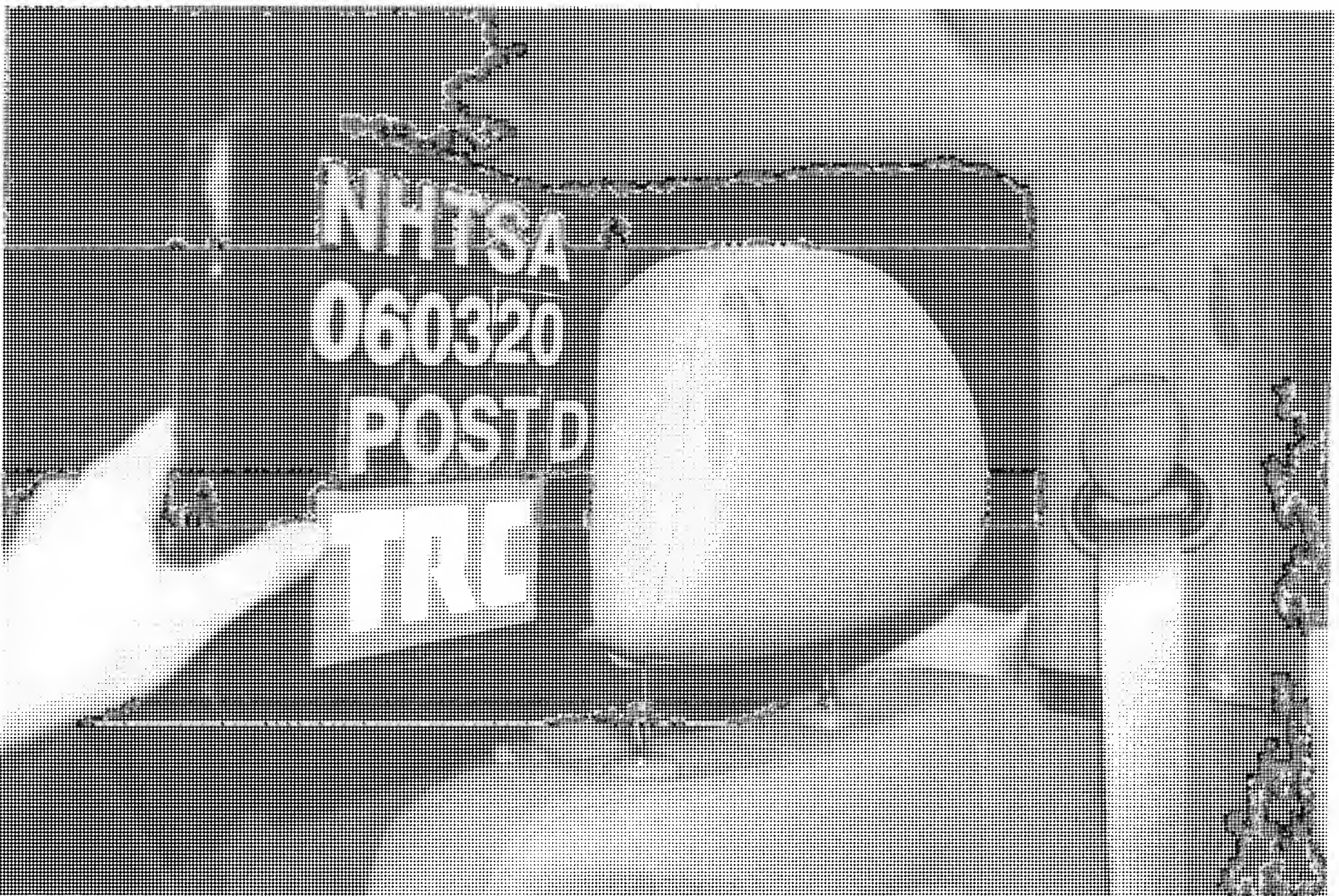


Figure A-54 Post-Test From SLD III Contact - View 1

A-58

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Figure A-45 Post-Test From SID III Contact - View 2  
A-59



Figure A-56 Post-Test From SID Film Contact - View 3  
A-60

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Figure A-37 Post-Tire From SPD Hill Contact - View 4  
A-61

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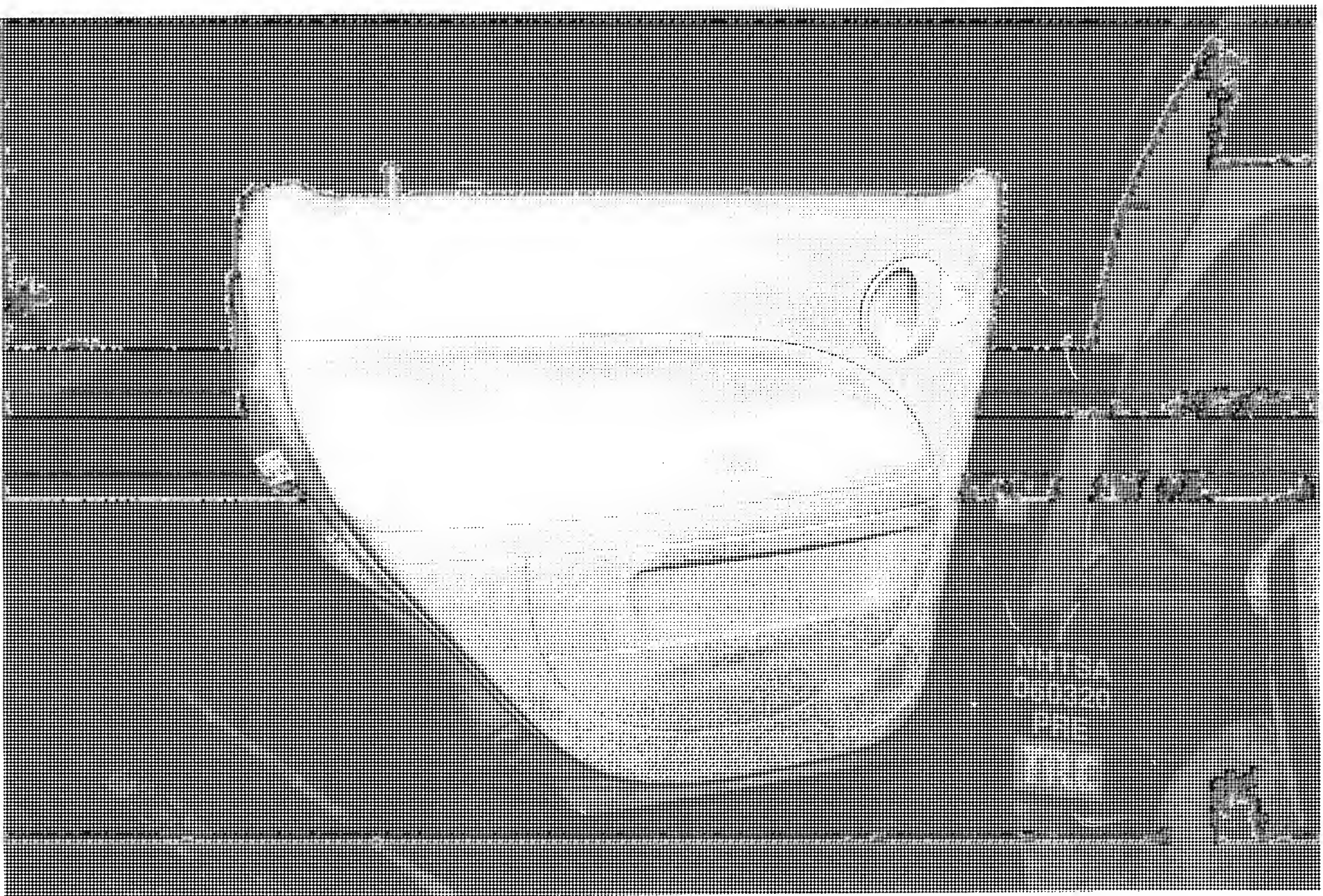


Figure A-58 Fire Test Interior of Rear Panel  
A-62





Figure A-59 Post-Impact Interior of Rear Hatch Showing SID Hill Impact Locations

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FIGURE A-66 Post-Test Heat Sink III Contact - View 1  
A-66





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TRL

FIGURE A-61 Post-Ten Rear Side Hill Contact - View 2  
A-65



Figure A-62 Post-Test Rear Side Hill Corridor - View 3  
A-66



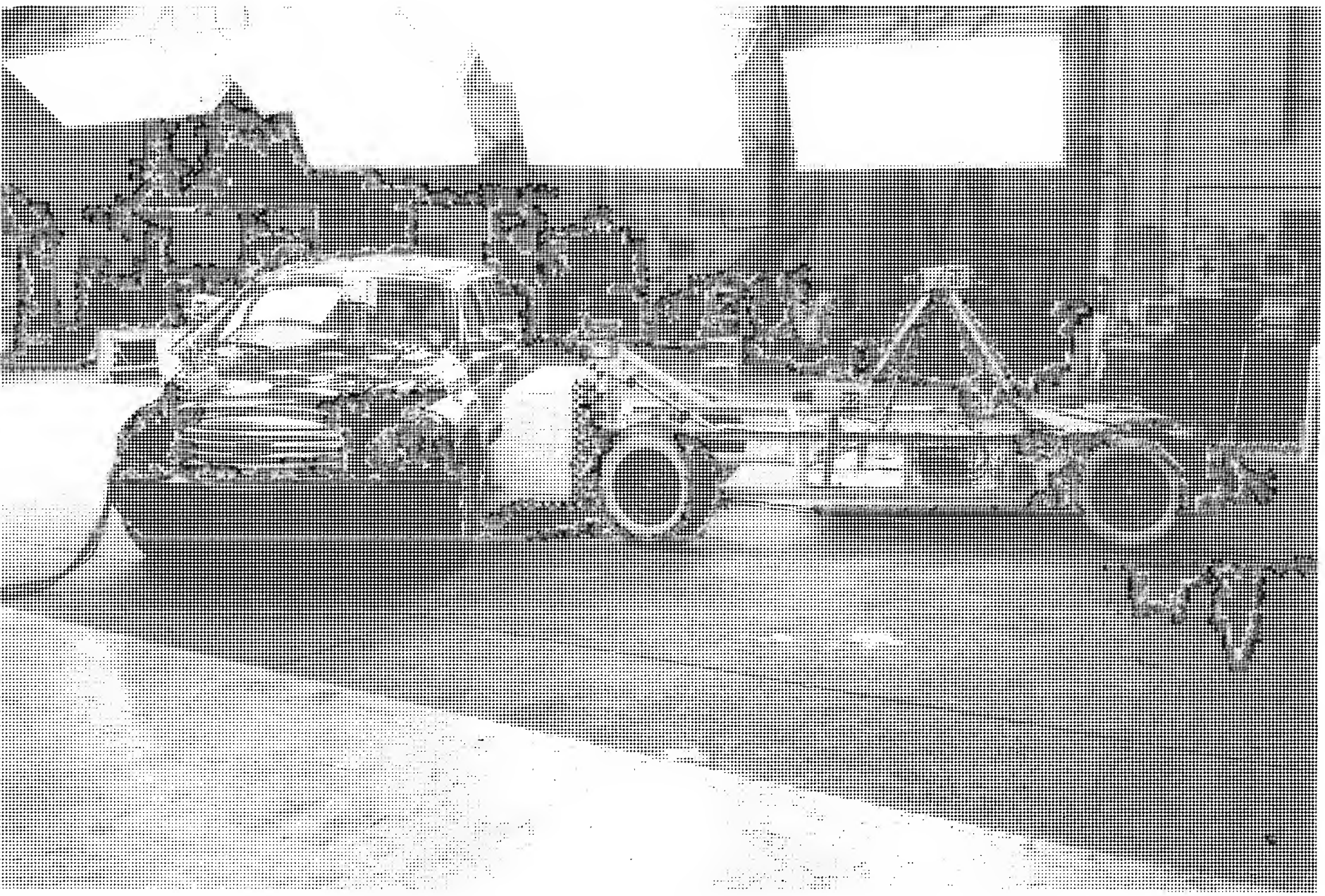


Figure A-63 Pre-Test Left Side View of NATH with Impactor Trace in Position

A-67

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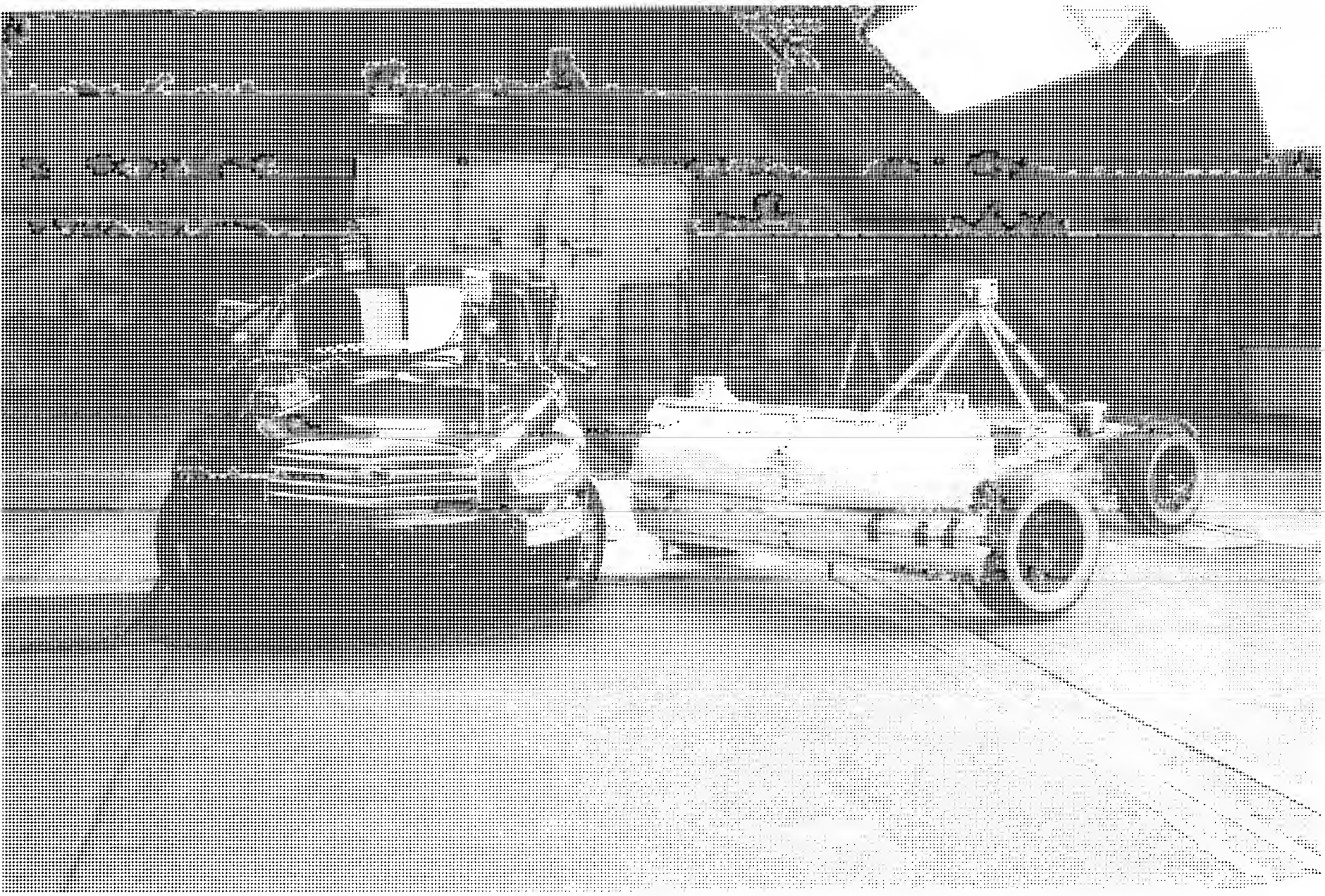


FIGURE A-64 Front View of Vehicle with Impactor Head in Position  
A-63

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Figure A-65 Pre-Test Primary Impact Point View  
A-65





Figure A-66 Post-Tire Primary Impact Point View  
A-70

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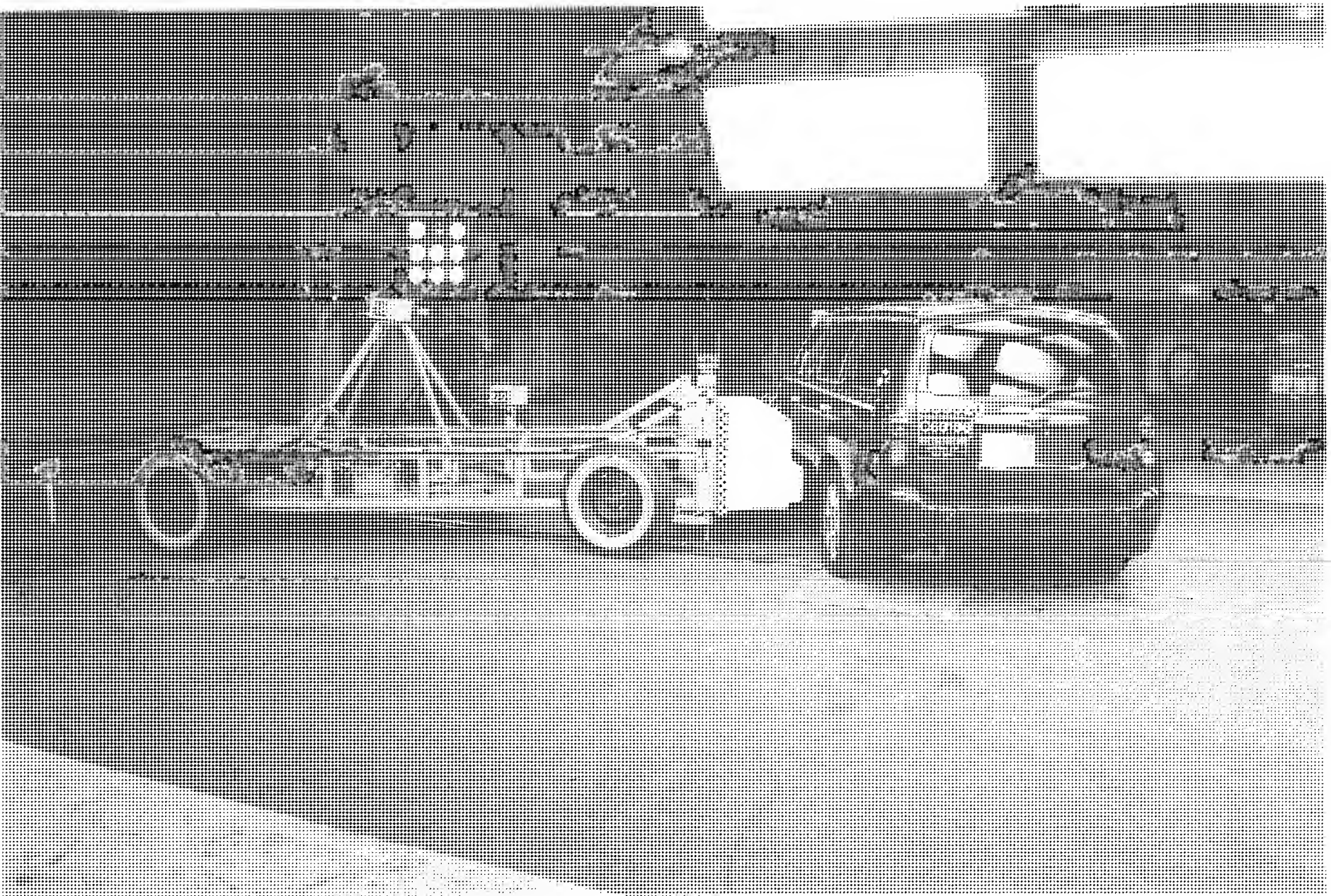


Figure A-67 Pre-test High Side View of NEDB with Impactor Head in Position  
A-71

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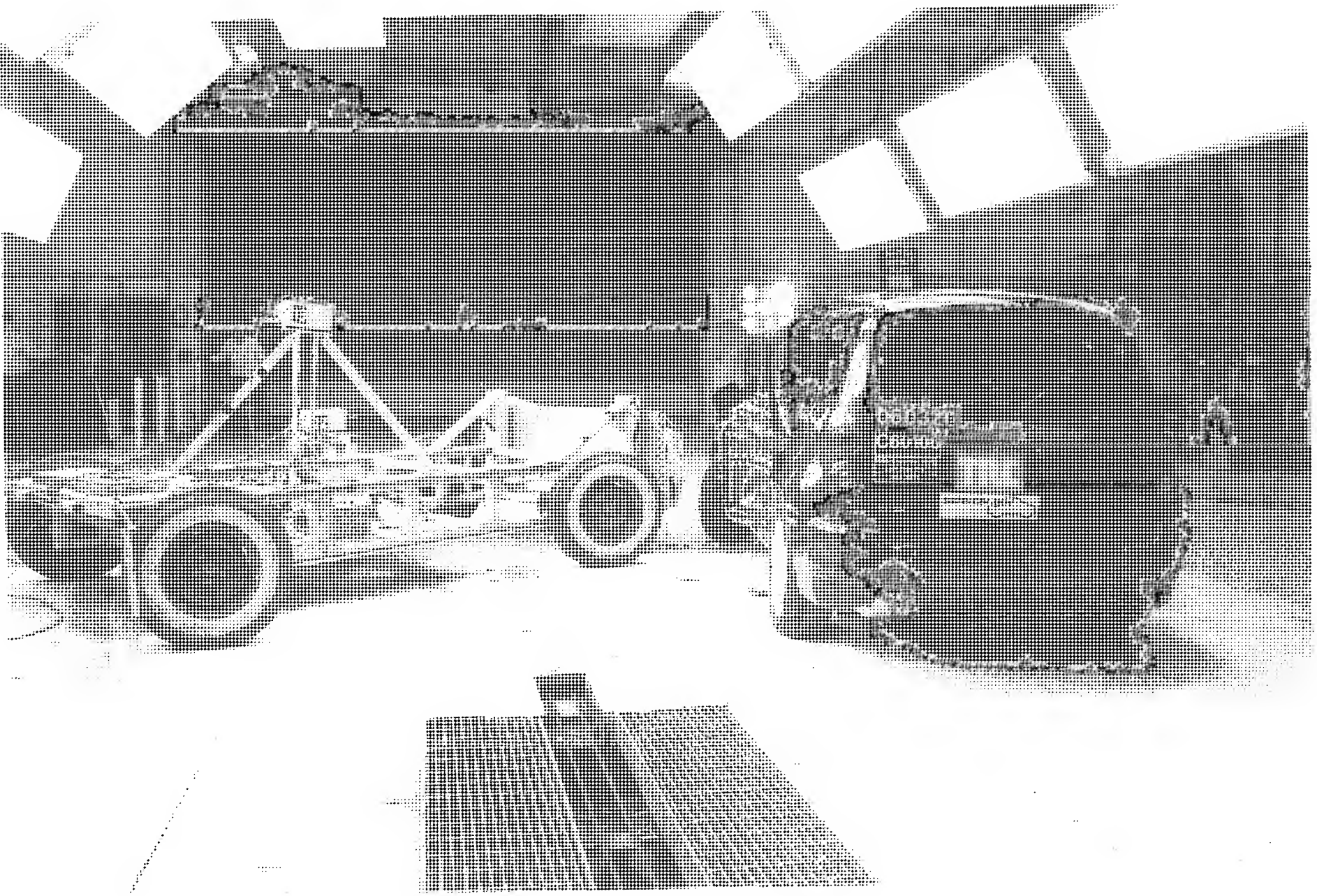


Figure A-68 Post-Test Right Side View of WMD With Impactor Truc In Position  
A-72

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Figure A-69 Pre-Test Secondary Impact Point View  
A.73

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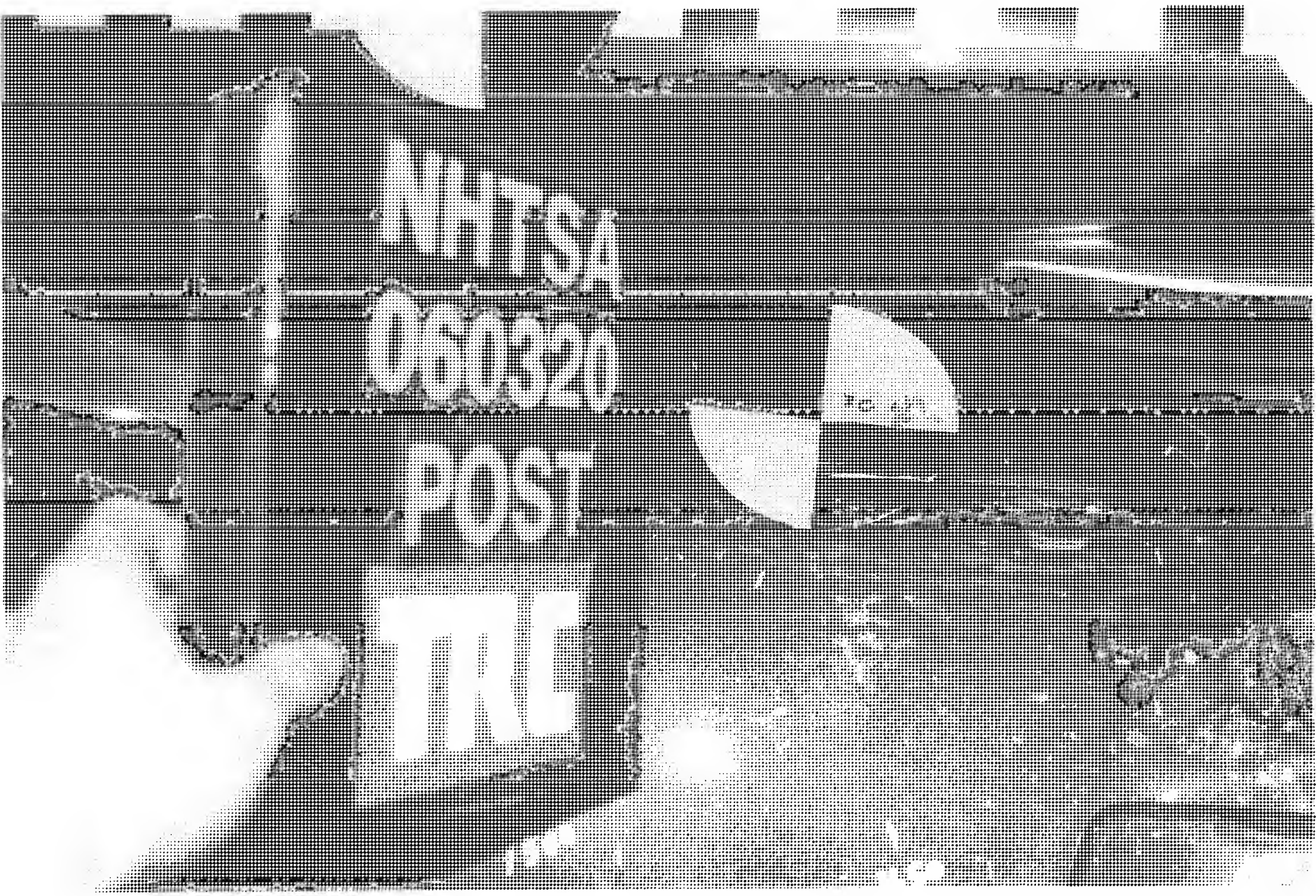



FIGURE A-70 Post-Test Secondary Impact Unit View  
A-74

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Figure A-71 Pre-Test Vehicle Certification Label View  
A-75

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				DIVISION GENERAL MOTORS DE MEXICO, S. DE R.L. DE C.V.		12/86
GVWR		GVWR FRT		GVWR RR		
1920KG(4240LB)		580KG(1262LB)		579KG(1261LB)		
THIS VEHICLE CONFORMS TO ALL APPLICABLE U.S. FEDERAL MOTOR VEHICLE SAFETY AND TRAFFIC PREVENTION STANDARDS IN EFFECT ON THE DATE OF MANUFACTURE SHOWN ABOVE.						
3ENDA23048539275				TYPE: M.P.V.		
MODEL: A340						
WHEEL	WHEEL SIZE	WHEEL R/C	RIM	COLD TIRE PRESSURE		
FR	P215/65R16	5	16X6.5J	210KPA(30PSI)		
RR	P215/65R16	5	16X6.5J	210KPA(30PSI)		
SWR	T160/70R16	4	16X4T	420KPA(60PSI)		
SEE OWNER'S MANUAL				FOR MORE INFORMATION.		



TIRE AND LOADING INFORMATION			
SEE OWNER'S MANUAL FOR IMPORTANT INFORMATION			
TIRE	LOADING	COLLECTOR'S	REMARKS
DATE	WEIGHT	TYPE	
TIME	PERCENT	OF	
PERCENT	OF	MAXIMUM	
PERCENT	OF	MAXIMUM	
PERCENT	OF	MAXIMUM	
PERCENT	OF	MAXIMUM	

LOAD CAPACITY: 1,000 LBS (454 KG)

SEE OWNER'S MANUAL FOR IMPORTANT INFORMATION

Figure A-73 Pre-Test Vehicle Recommended Tire Pressure Label View  
A-76

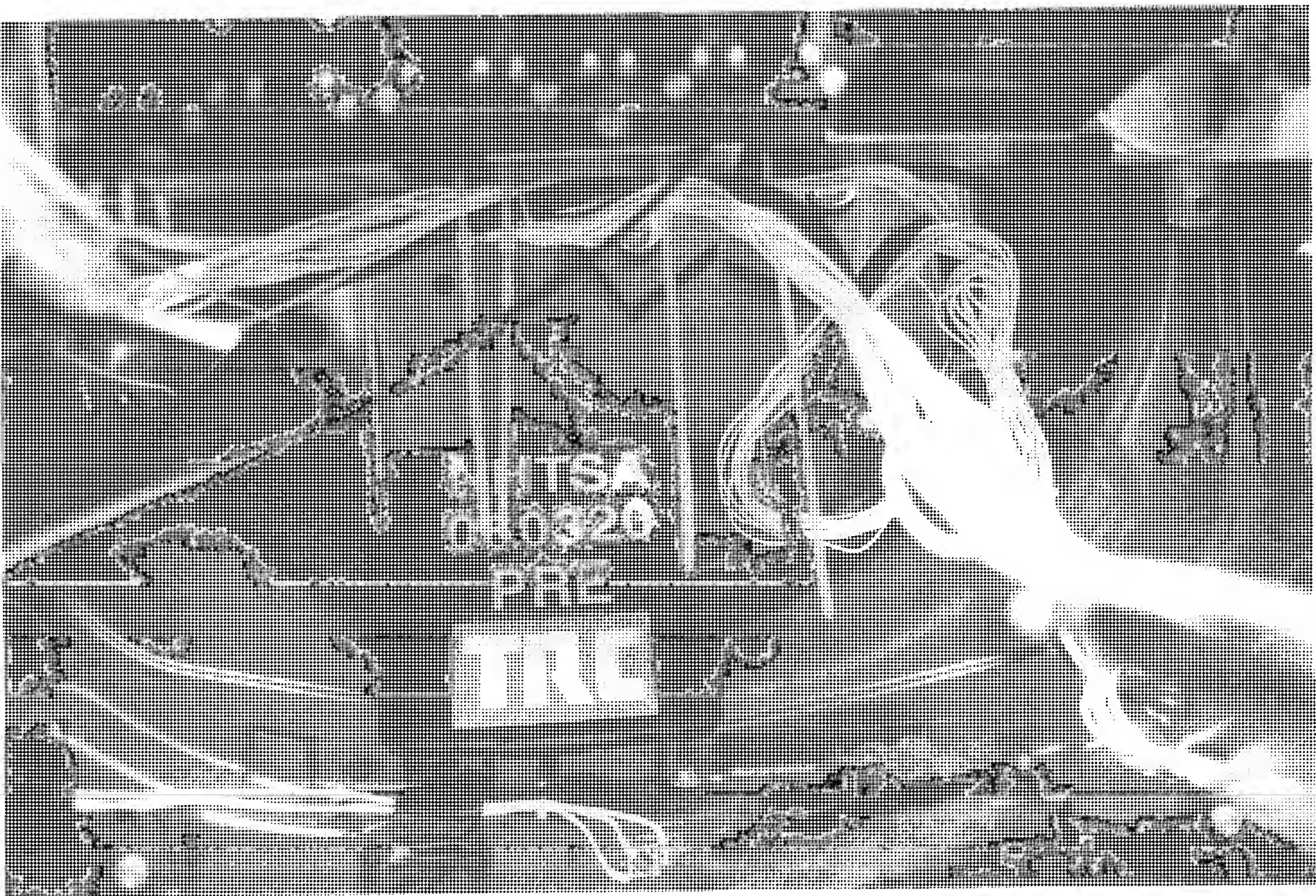


Figure A-73 Pre-Test Image  
A 77

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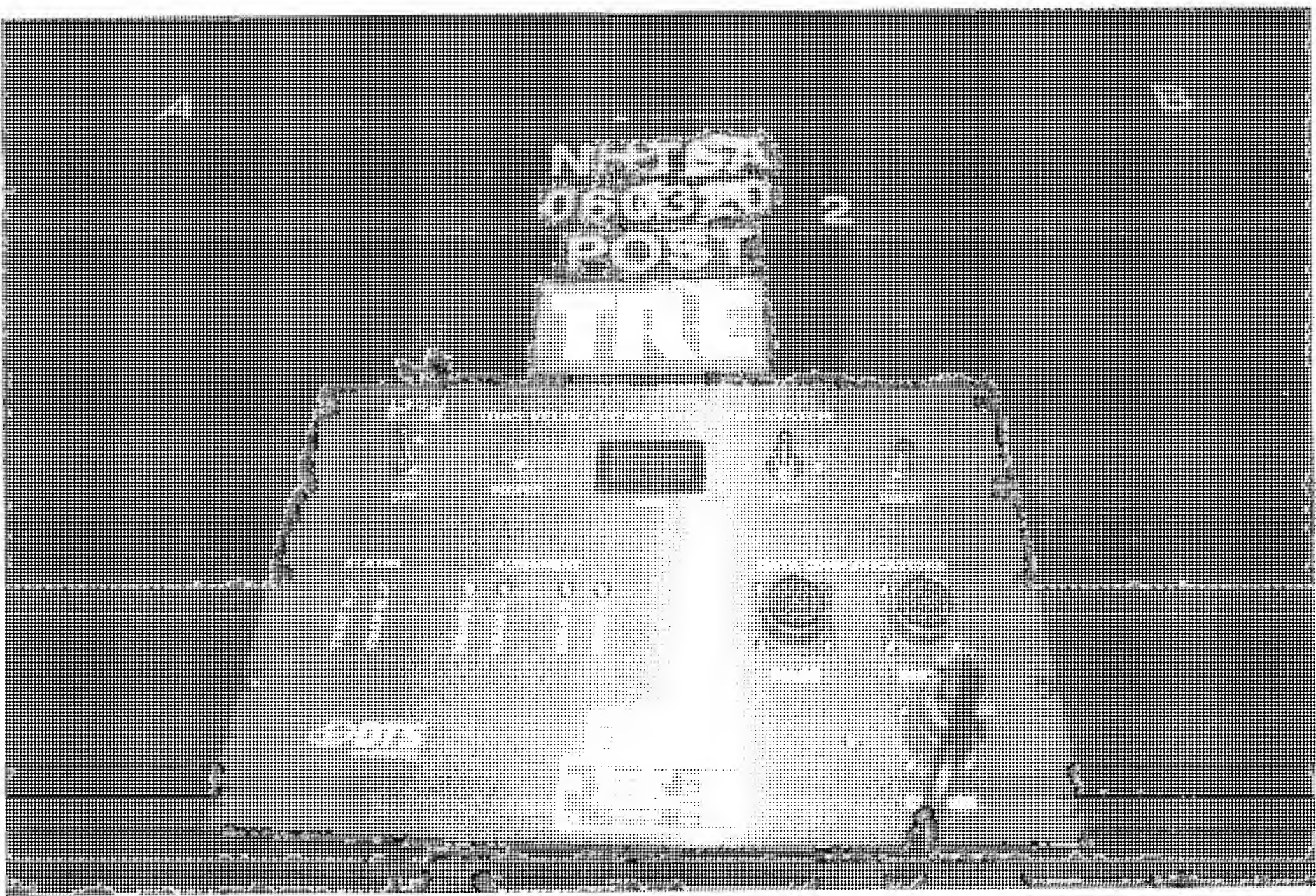


FIGURE A-74 Post-Treat Light Trap Digital Readout - View 1  
A-78



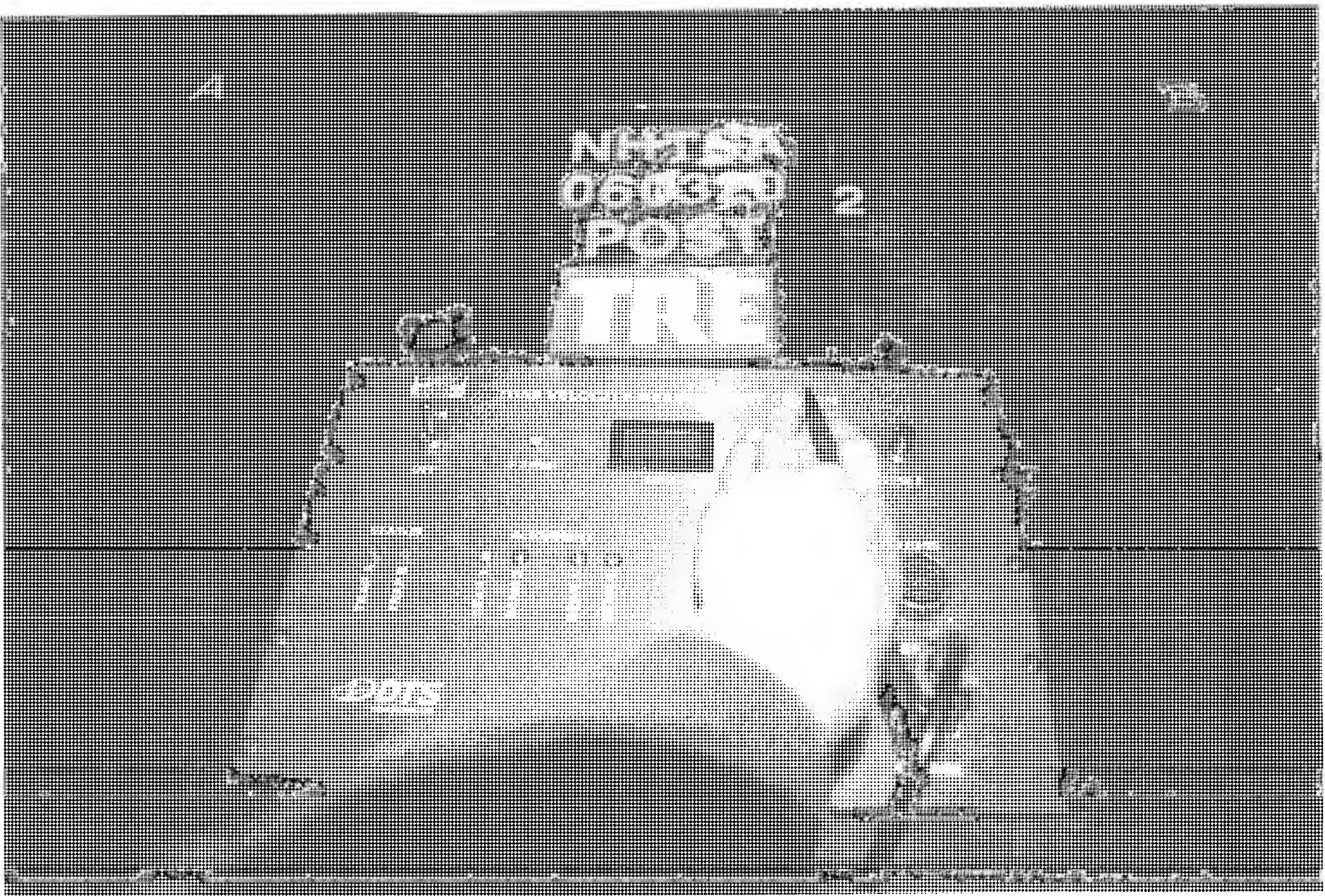


Figure A-75 Post-Tensioning Head - View 2  
A-79

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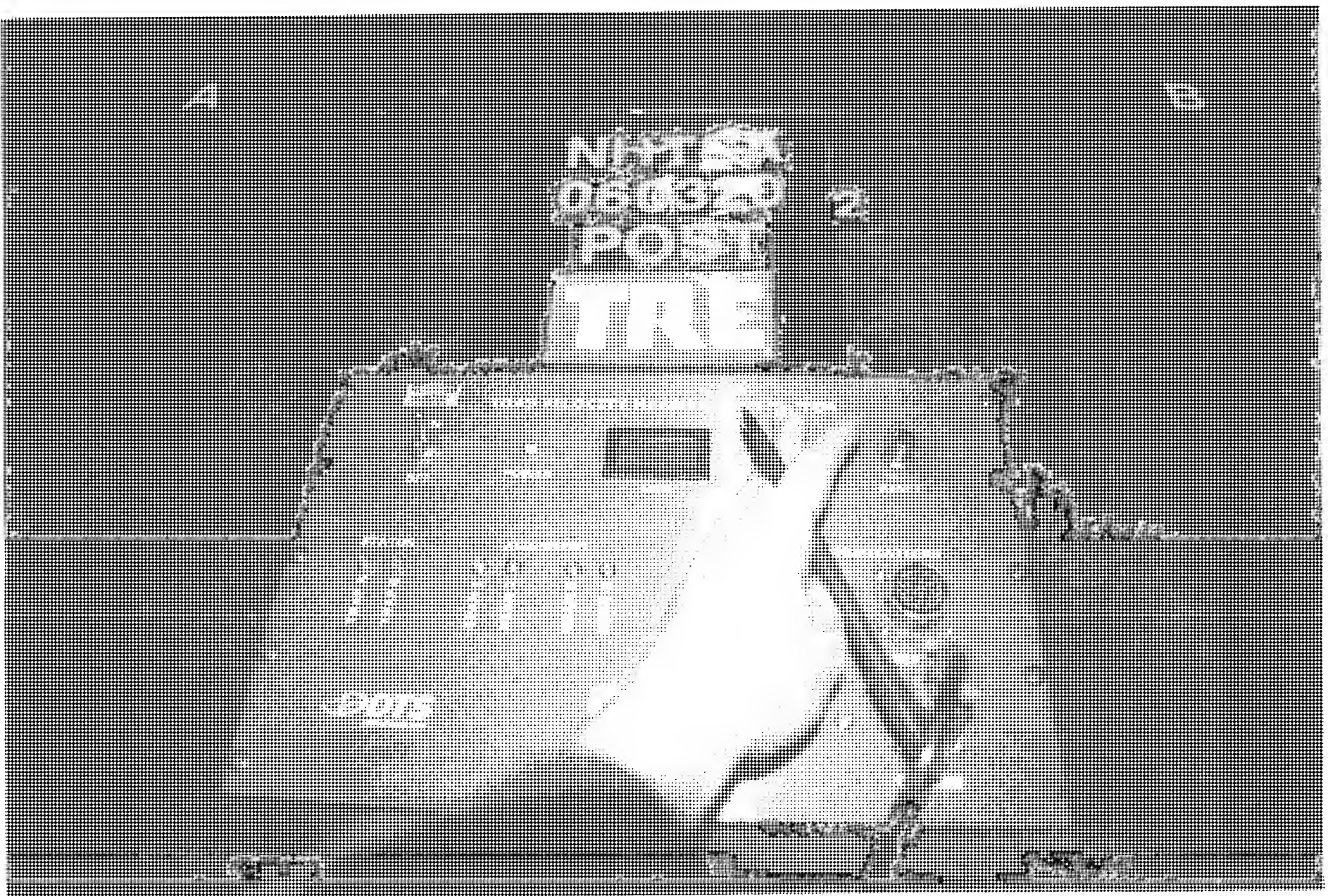


Figure A-76 Post-Test Light Temp Digital Readout - View 3  
A-80



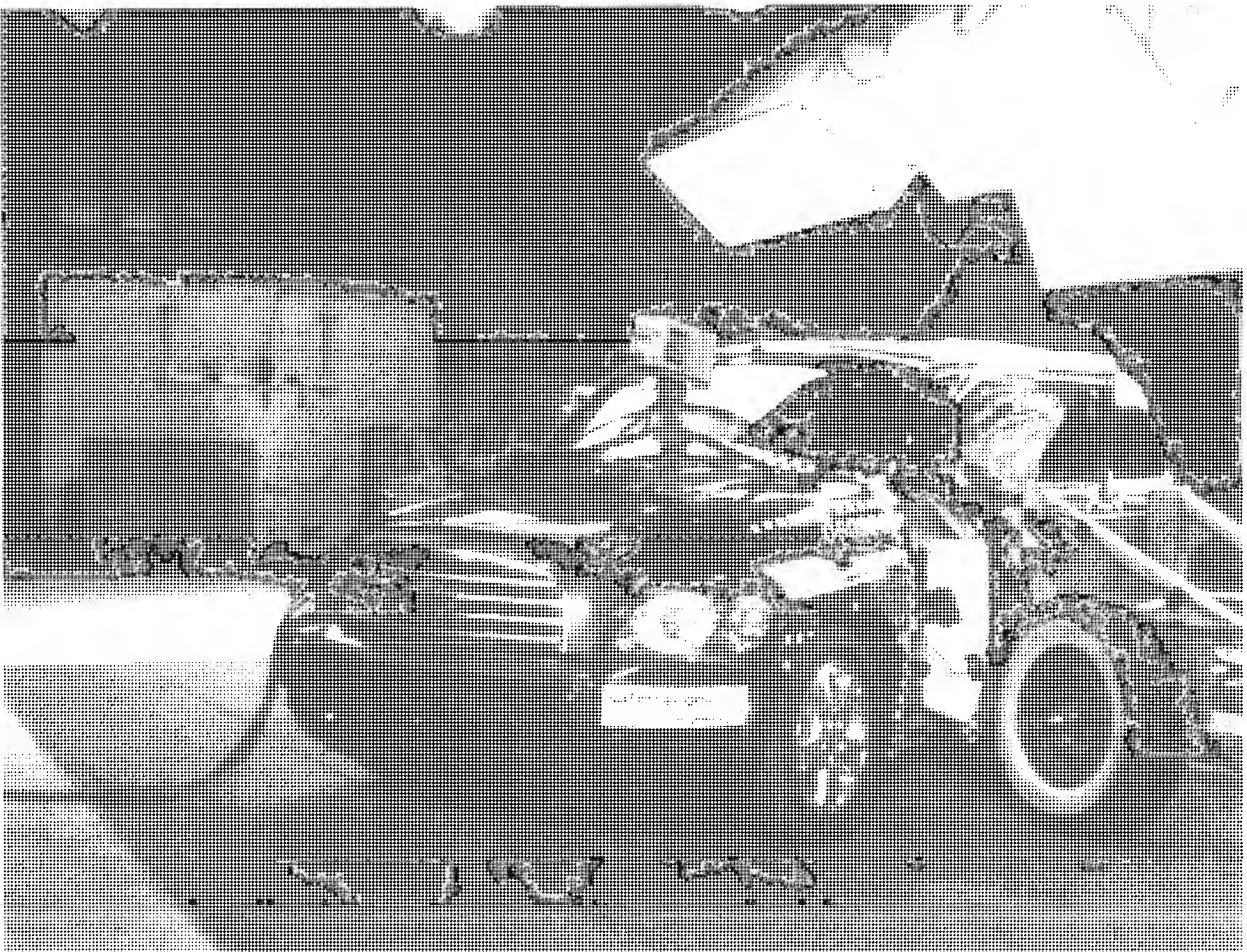


Figure A-77 Impact Event



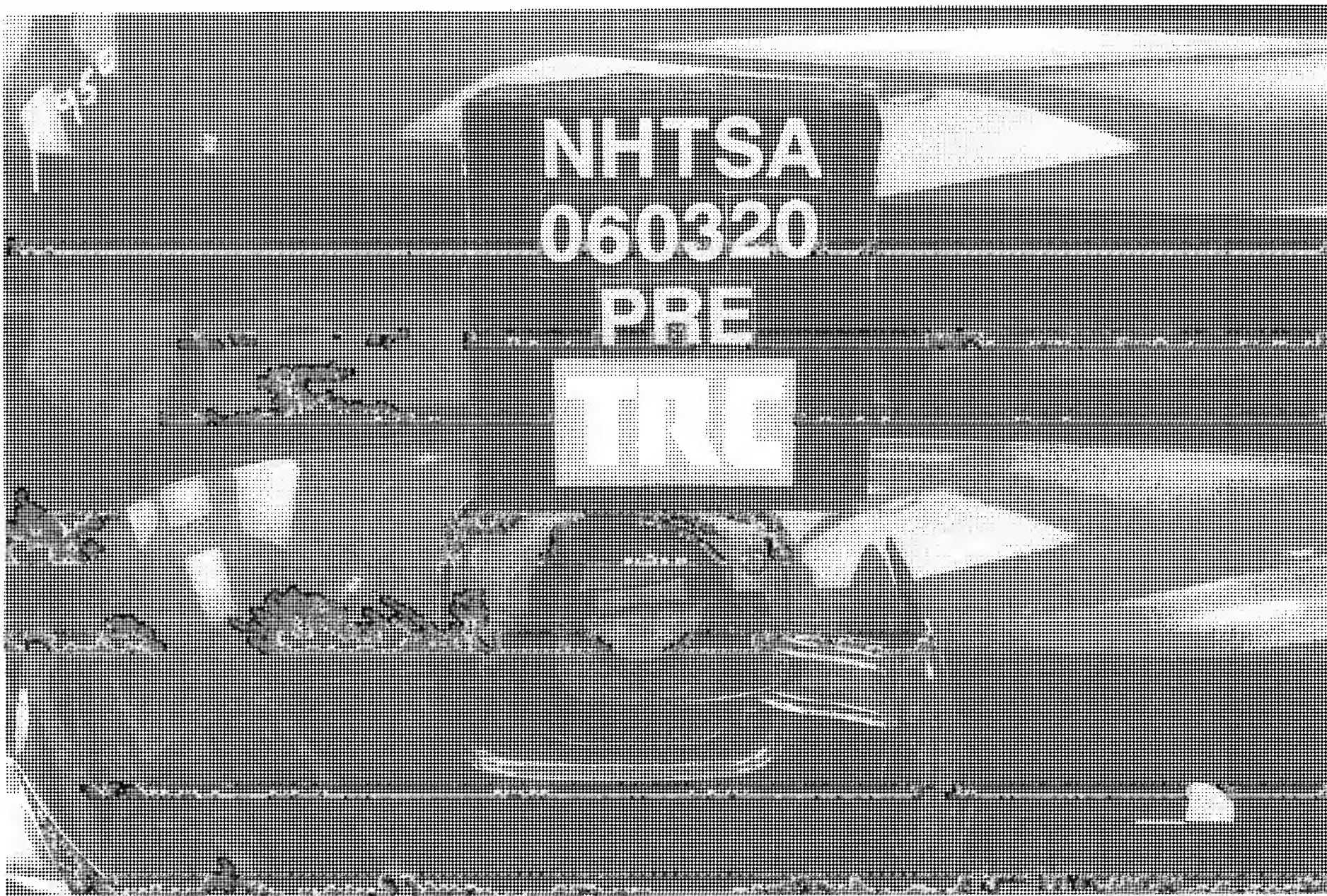


Figure A-78 Pre-Test Road Cap  
A-82

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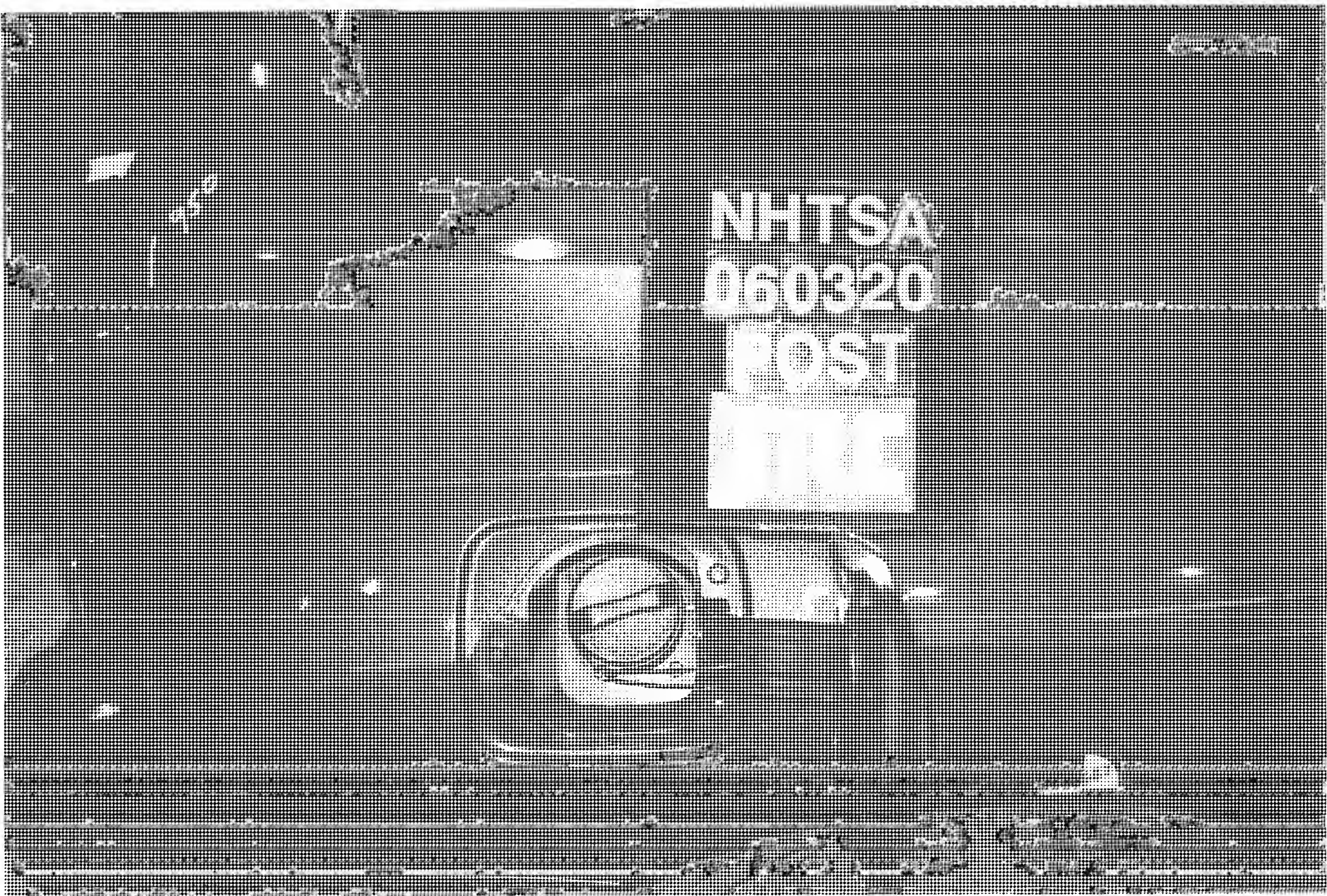


Figure A-79 Post-Test Fuel Cup  
A-83

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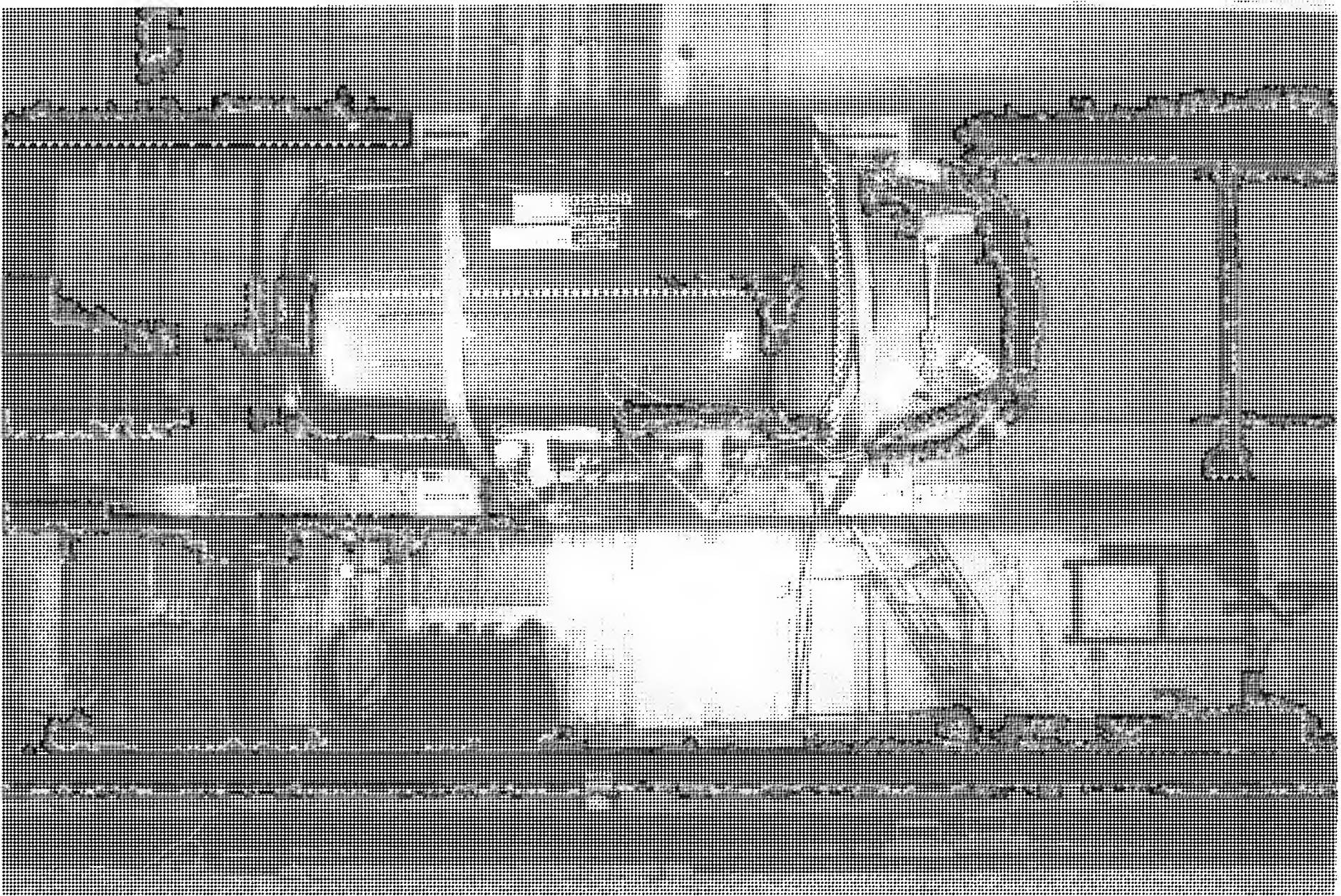


Figure A-4B INVINS 301 Roll-over View at 90°

A-84

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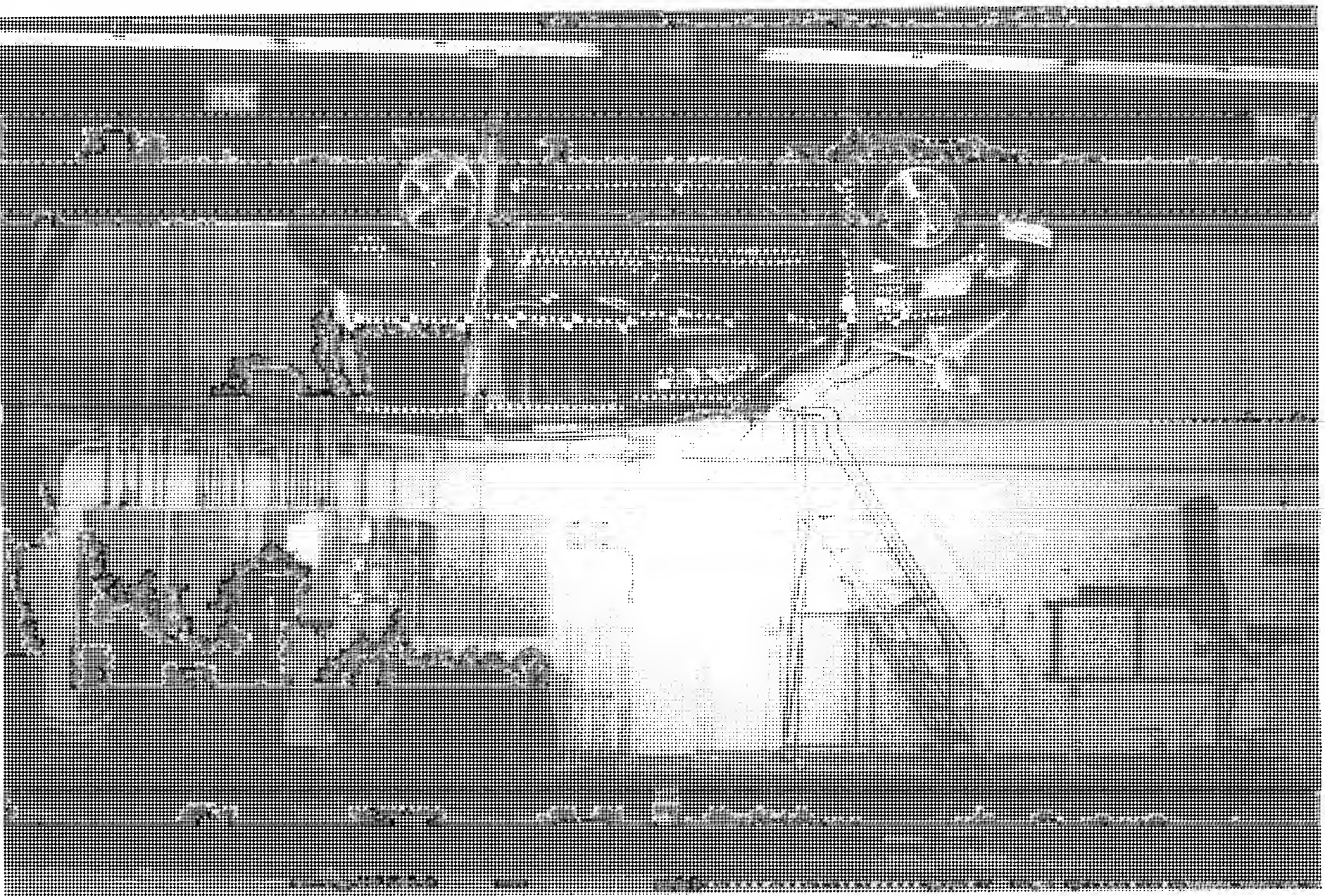


Figure A-81 EAVSS 301 NO. 1 View NE 180°  
A-85

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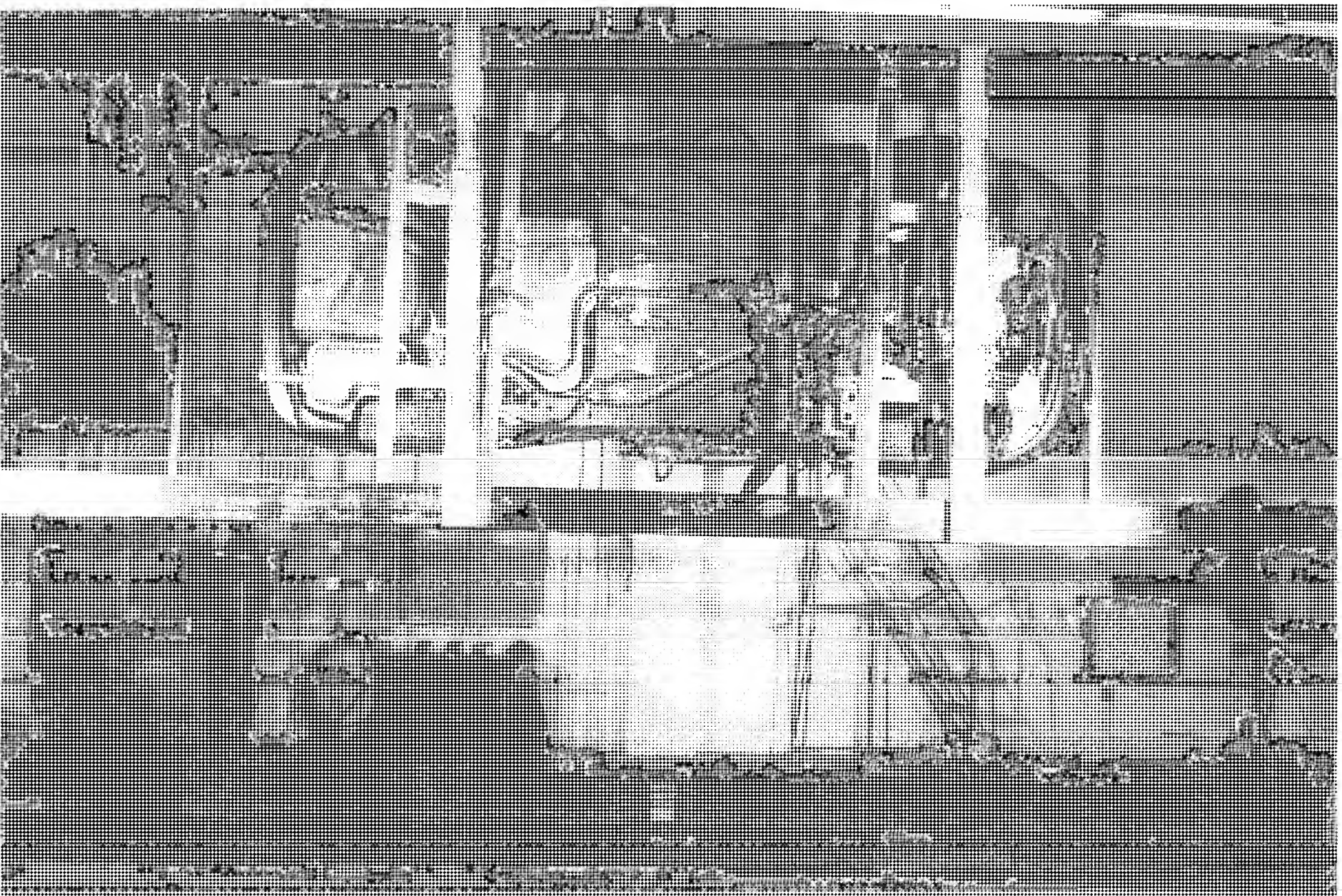


Figure A-12 JMWSS 301 Reducer View at 270°



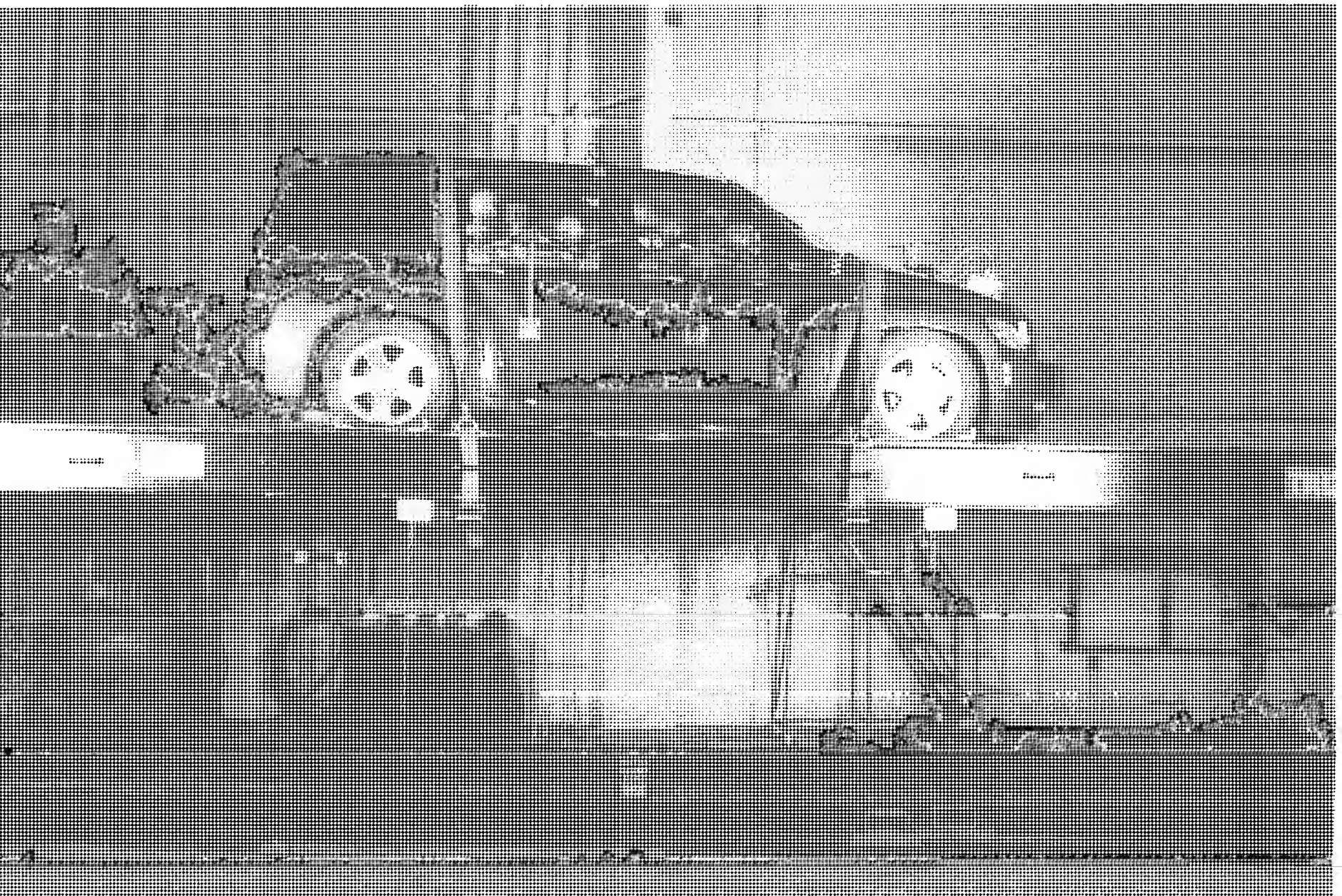


FIGURE A-85 INVERSE AND REVERSE VIEW AT 344°

A-87

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Appendix B

Data Plots

Table of Data Plots

Driver and Left Rear Passenger Dummy Instrumentation Plots

Acceleration Data - Filter Class 1000

Integration Data - Filter Class 180

<u>Plot No.</u>	<u>Data Plot Title</u>	<u>Page</u>
1	Driver Head X-Axis Acceleration	B-9
2	Driver Head X-Axis Velocity	B-10
3	Driver Head Y-Axis Acceleration	B-11
4	Driver Head Y-Axis Velocity	B-12
5	Driver Head Z-Axis Acceleration	B-13
6	Driver Head Z-Axis Velocity	B-14
7	Driver Head Resultant Acceleration	B-15
8	Driver Neck X-Axis Shear Force	B-16
9	Driver Neck Y-Axis Shear Force	B-17
10	Driver Neck Z-Axis Shear Force	B-18
11	Driver Neck Moment About X-Axis	B-19
12	Driver Neck Moment About Y-Axis	B-20
13	Driver Neck Moment About Z-Axis	B-21
14	Driver Neck Occipital Condyle Moment about X-Axis	B-22
15	Driver Upper Rib Y-Axis Acceleration	B-23
16	Driver Upper Rib Y-Axis Velocity	B-24
17	Driver Lower Rib Y-Axis Acceleration	B-25
18	Driver Lower Rib Y-Axis Velocity	B-26
19	Driver Lower Spine Y-Axis Acceleration	B-27
20	Driver Lower Spine Y-Axis Velocity	B-28
21	Driver Pelvis Y-Axis Acceleration	B-29
22	Driver Pelvis Y-Axis Velocity	B-30
23	Left Rear Passenger Head X-Axis Acceleration	B-31
24	Left Rear Passenger Head X-Axis Velocity	B-32
25	Left Rear Passenger Head Y-Axis Acceleration	B-33
26	Left Rear Passenger Head Y-Axis Velocity	B-34
27	Left Rear Passenger Head Z-Axis Acceleration	B-35
28	Left Rear Passenger Head Z-Axis Velocity	B-36
29	Left Rear Passenger Head Resultant Acceleration	B-37

Table of Data Plots (Continued)

Driver and Left Rear Passenger Dummy Instrumentation Plots (Continued)

Acceleration Data - Filter Class 1000

Integration Data - Filter Class 180

Force Data - Filter Class 1000

Moment Data - Filter Class 600

Contact Data - Filter Class 1000

<u>Plot No.</u>	<u>Data Plot Title</u>	<u>Page</u>
30	Left Rear Passenger Neck X-Axis Shear Force	B-38
31	Left Rear Passenger Neck Y-Axis Shear Force	B-39
32	Left Rear Passenger Neck Z-Axis Shear Force	B-40
33	Left Rear Passenger Neck Moment About X-Axis	B-41
34	Left Rear Passenger Neck Moment About Y-Axis	B-42
35	Left Rear Passenger Neck Moment About Z-Axis	B-43
36	Left Rear Passenger Neck Occipital Condyle Moment about X-Axis	B-44
37	Left Rear Passenger Upper Rib Y-Axis Acceleration	B-45
38	Left Rear Passenger Upper Rib Y-Axis Velocity	B-46
39	Left Rear Passenger Lower Rib Y-Axis Acceleration	B-47
40	Left Rear Passenger Lower Rib Y-Axis Velocity	B-48
41	Left Rear Passenger Lower Spine Y-Axis Acceleration	B-49
42	Left Rear Passenger Lower Spine Y-Axis Velocity	B-50
43	Left Rear Passenger Pelvis Y-Axis Acceleration	B-51
44	Left Rear Passenger Pelvis Y-Axis Velocity	B-52

Driver and Left Rear Passenger Dummy Instrumentation Plots

Acceleration Data - Filter Class 1000 - Redundant

Integration Data - Filter Class 1000 - Redundant

<u>Plot No.</u>	<u>Data Plot Title</u>	<u>Page</u>
45	Driver Head X-Axis Redundant Acceleration	B-54
46	Driver Head X-Axis Redundant Velocity	B-55
47	Driver Head Y-Axis Redundant Acceleration	B-56
48	Driver Head Y-Axis Redundant Velocity	B-57
49	Driver Head Z-Axis Redundant Acceleration	B-58
50	Driver Head Z-Axis Redundant Velocity	B-59



Table of Data Plots (Continued)

Driver and Left Rear Passenger Dummy Instrumentation Plots (Continued)

Acceleration Data - Filter Class 1000 - Redundant

Integration Data - Filter Class 1000 - Redundant

<u>Plot No.</u>	<u>Data Plot Title</u>	<u>Page</u>
51	Driver Head Resultant Redundant Acceleration	B-60
52	Driver Upper Rib Y-Axis Redundant Acceleration	B-61
53	Driver Upper Rib Y-Axis Redundant Velocity	B-62
54	Driver Lower Rib Y-Axis Redundant Acceleration	B-63
55	Driver Lower Rib Y-Axis Redundant Velocity	B-64
56	Driver Lower Spine Y-Axis Redundant Acceleration	B-65
57	Driver Lower Spine Y-Axis Redundant Velocity	B-66
58	Left Rear Passenger Head X-Axis Redundant Acceleration	B-67
59	Left Rear Passenger Head X-Axis Redundant Velocity	B-68
60	Left Rear Passenger Head Y-Axis Redundant Acceleration	B-69
61	Left Rear Passenger Head Y-Axis Redundant Velocity	B-70
62	Left Rear Passenger Head Z-Axis Redundant Acceleration	B-71
63	Left Rear Passenger Head Z-Axis Redundant Velocity	B-72
64	Left Rear Passenger Head Resultant Redundant Acceleration	B-73
65	Left Rear Passenger Upper Rib Y-Axis Redundant Acceleration	B-74
66	Left Rear Passenger Upper Rib Y-Axis Redundant Velocity	B-75
67	Left Rear Passenger Lower Rib Y-Axis Redundant Acceleration	B-76
68	Left Rear Passenger Lower Rib Y-Axis Redundant Velocity	B-77
69	Left Rear Passenger Lower Spine Y-Axis Redundant Acceleration	B-78
70	Left Rear Passenger Lower Spine Y-Axis Redundant Velocity	B-79

Test Vehicle Instrumentation Plots

Acceleration Data - Filter Class 60

Integration Data - Filter Class 180

<u>Plot No.</u>	<u>Data Plot Title</u>	<u>Page</u>
71	Right Side Sill At Front Seat X-Axis Acceleration	B-81
72	Right Side Sill At Front Seat X-Axis Velocity	B-82
73	Right Side Sill At Front Seat Y-Axis Acceleration	B-83
74	Right Side Sill At Front Seat Y-Axis Velocity	B-84

Table of Data Plots (Continued)  
Test Vehicle Instrumentation Plots (Continued)  
Acceleration Data - Filter Class 60  
Integration Data - Filter Class 180

<u>Plot No.</u>	<u>Data Plot Title</u>	<u>Page</u>
75	Right Side Sill At Front Seat Z-Axis Acceleration	B-85
76	Right Side Sill At Front Seat Z-Axis Velocity	B-86
77	Right Side Sill At Front Seat Resultant Acceleration	B-87
78	Right Side Sill At Rear Seat X-Axis Acceleration	B-88
79	Right Side Sill At Rear Seat X-Axis Velocity	B-89
80	Right Side Sill At Rear Seat Y-Axis Acceleration	B-90
81	Right Side Sill At Rear Seat Y-Axis Velocity	B-91
82	Right Side Sill At Rear Seat Z-Axis Acceleration	B-92
83	Right Side Sill At Rear Seat Z-Axis Velocity	B-93
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85	Rear Floorpan Above Axle X-Axis Acceleration	B-95
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Integration Data - Filter Class 180

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Driver and Left Rear Passenger Dummy Instrumentation Plots  
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Driver and Left Rear Passenger Dummy Instrumentation Plots

Acceleration Data - Filter Class 1000

Integration Data - Filter Class 180

56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

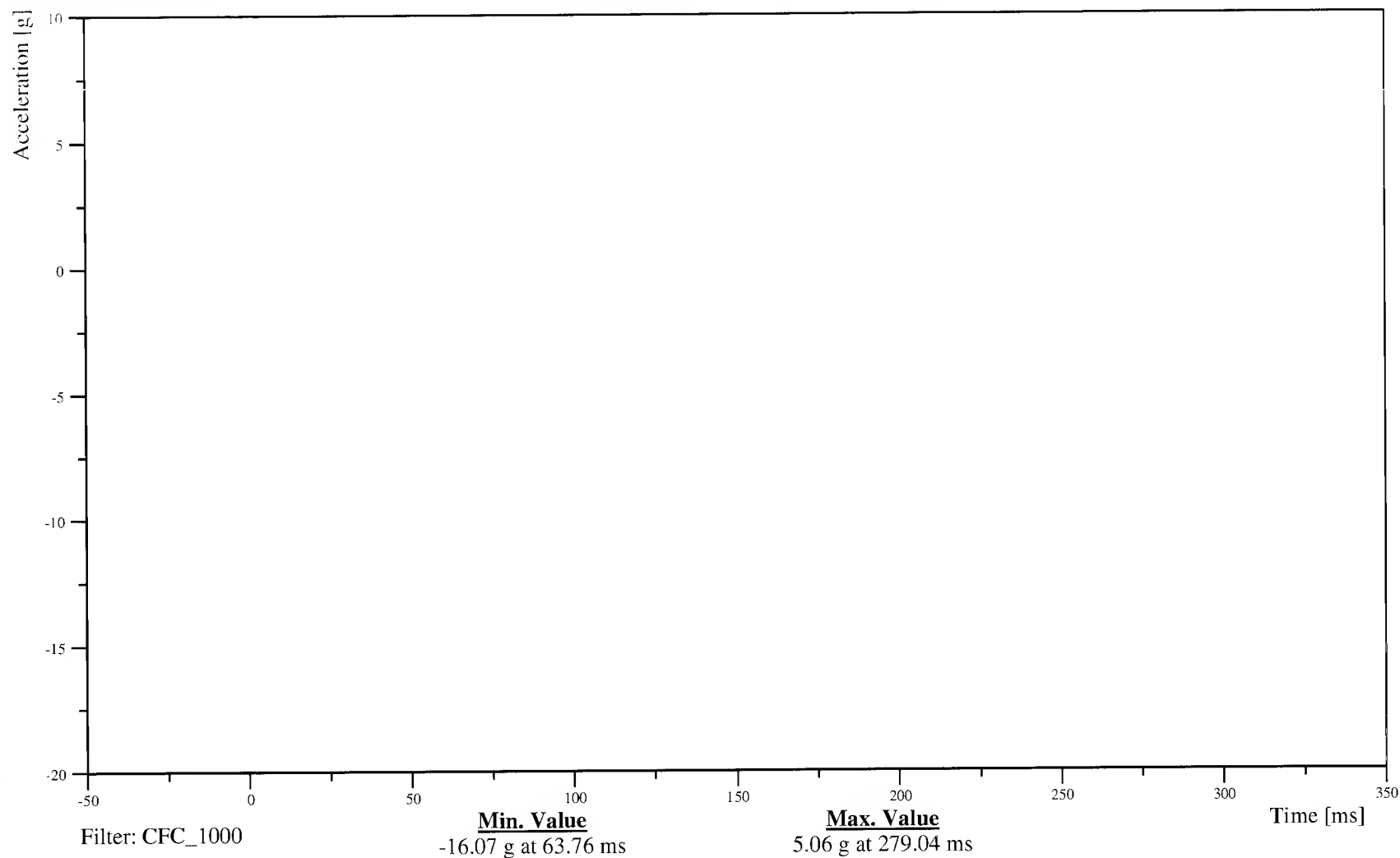
Date: 03/20/2006  
Time: 12.01

DRIVER HEAD X-AXIS ACCELERATION

Customer: NHTSA  
Test Number: C60106

11HEADCG00SHACXA

TRC Inc. Test Lab: CTF  
Test Number: 060320



B-9

060320



56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

Date: 03/20/2006

Time: 12:01

DRIVER HEAD X-AXIS VELOCITY

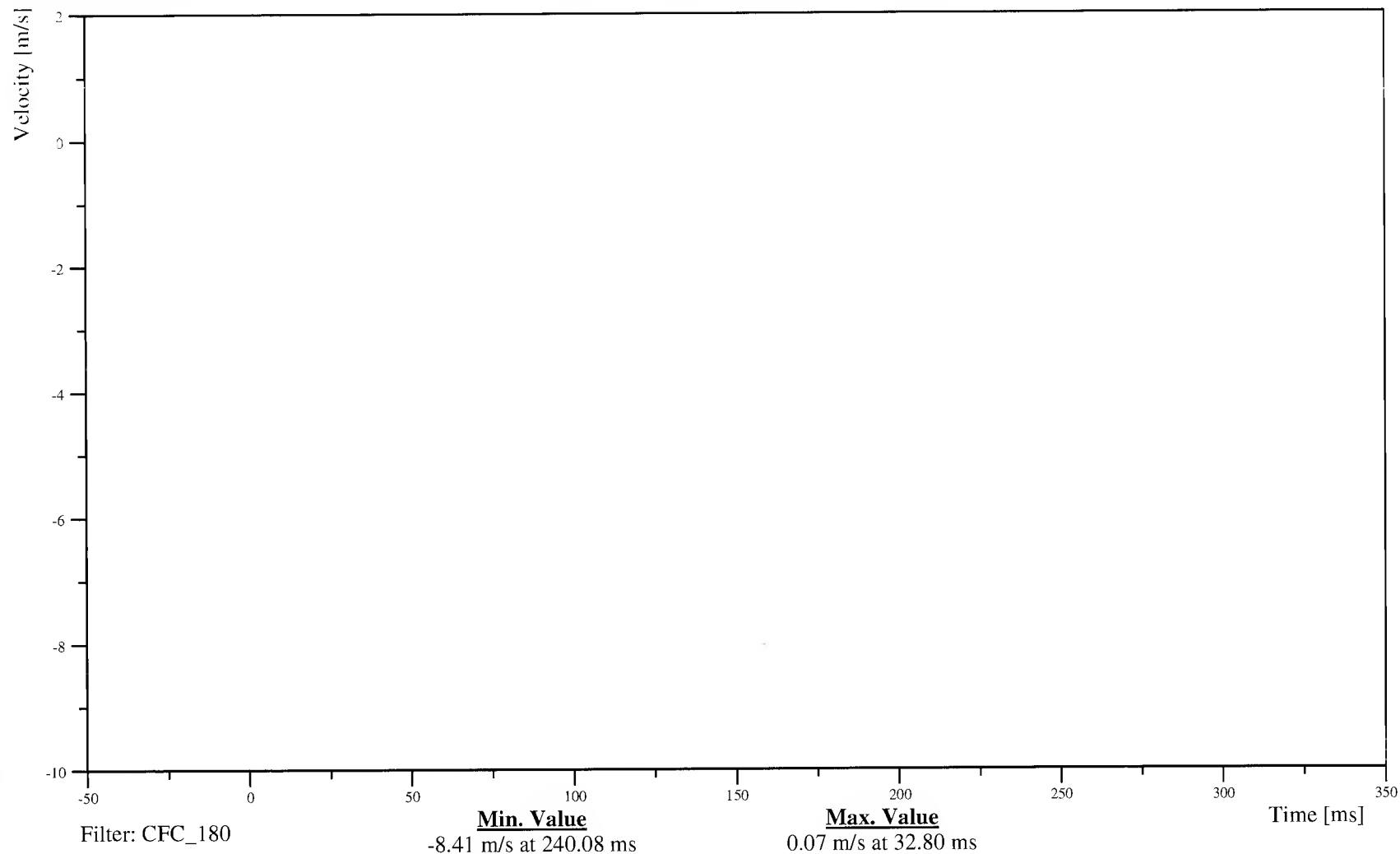
Customer: NHTSA

Test Number: C60106

11HEADCG00SHVEXC

TRC Inc. Test Lab: CTF

Test Number: 060320



B-10

060320

56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

Date: 03/20/2006

Time: 12:01

DRIVER HEAD Y-AXIS ACCELERATION

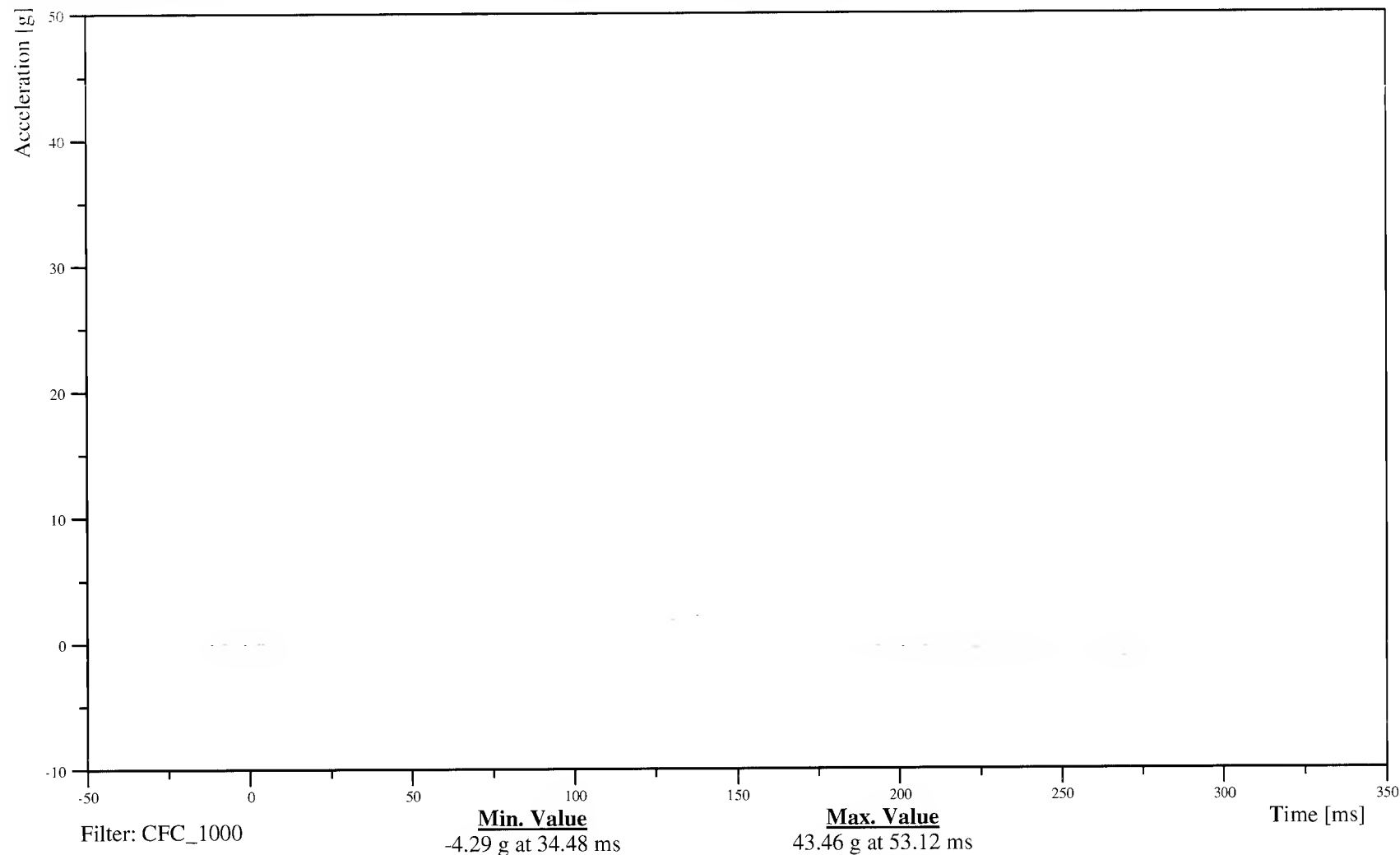
Customer: NHTSA

Test Number: C60106

11HEADCG00SHACYA

TRC Inc. Test Lab: CTF

Test Number: 060320



B-11

060320

# 56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

Date: 03/20/2006

Time: 12.01

## DRIVER HEAD Y-AXIS VELOCITY

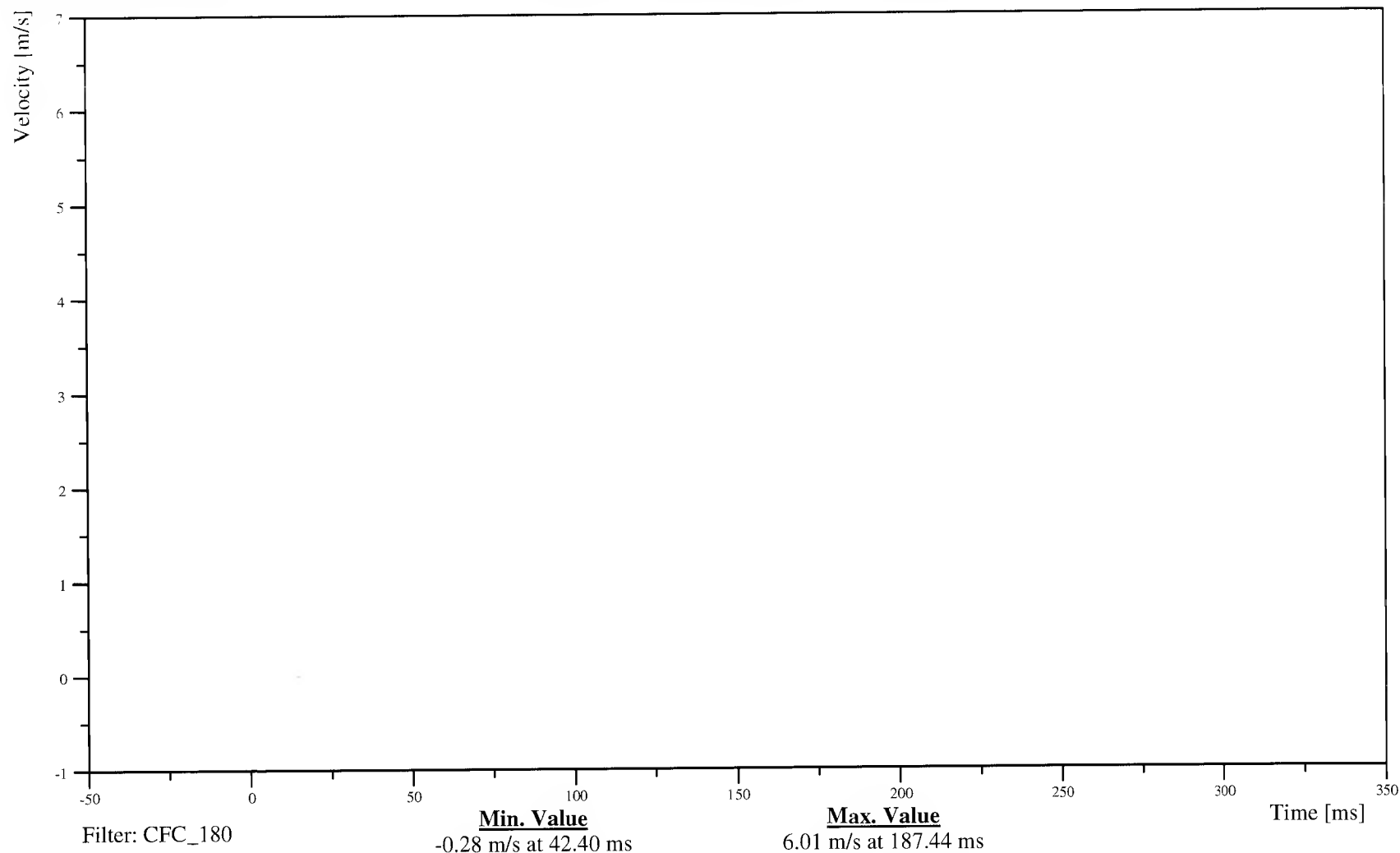
Customer: NHTSA

Test Number: C60106

11HEADCG00SHVEYC

TRC Inc. Test Lab: CTF

Test Number: 060320





56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

Date: 03/20/2006

Time: 12:01

DRIVER HEAD Z-AXIS ACCELERATION

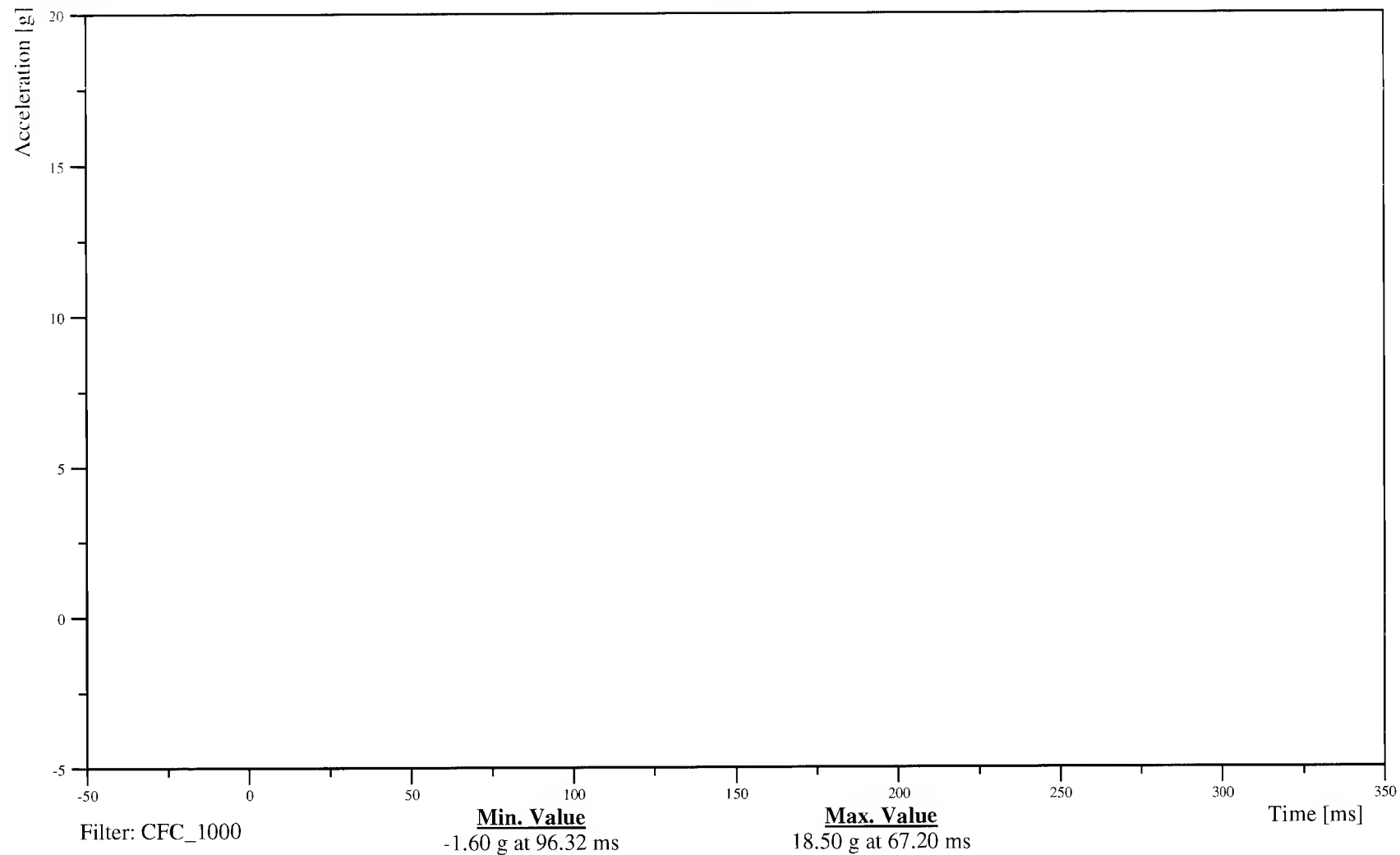
Customer: NHTSA

Test Number: C60106

11HEADCG00SHACZA

TRC Inc. Test Lab: CTF

Test Number: 060320



B-13

060320

# 56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

Date: 03/20/2006

Time: 12:01

## DRIVER HEAD Z-AXIS VELOCITY

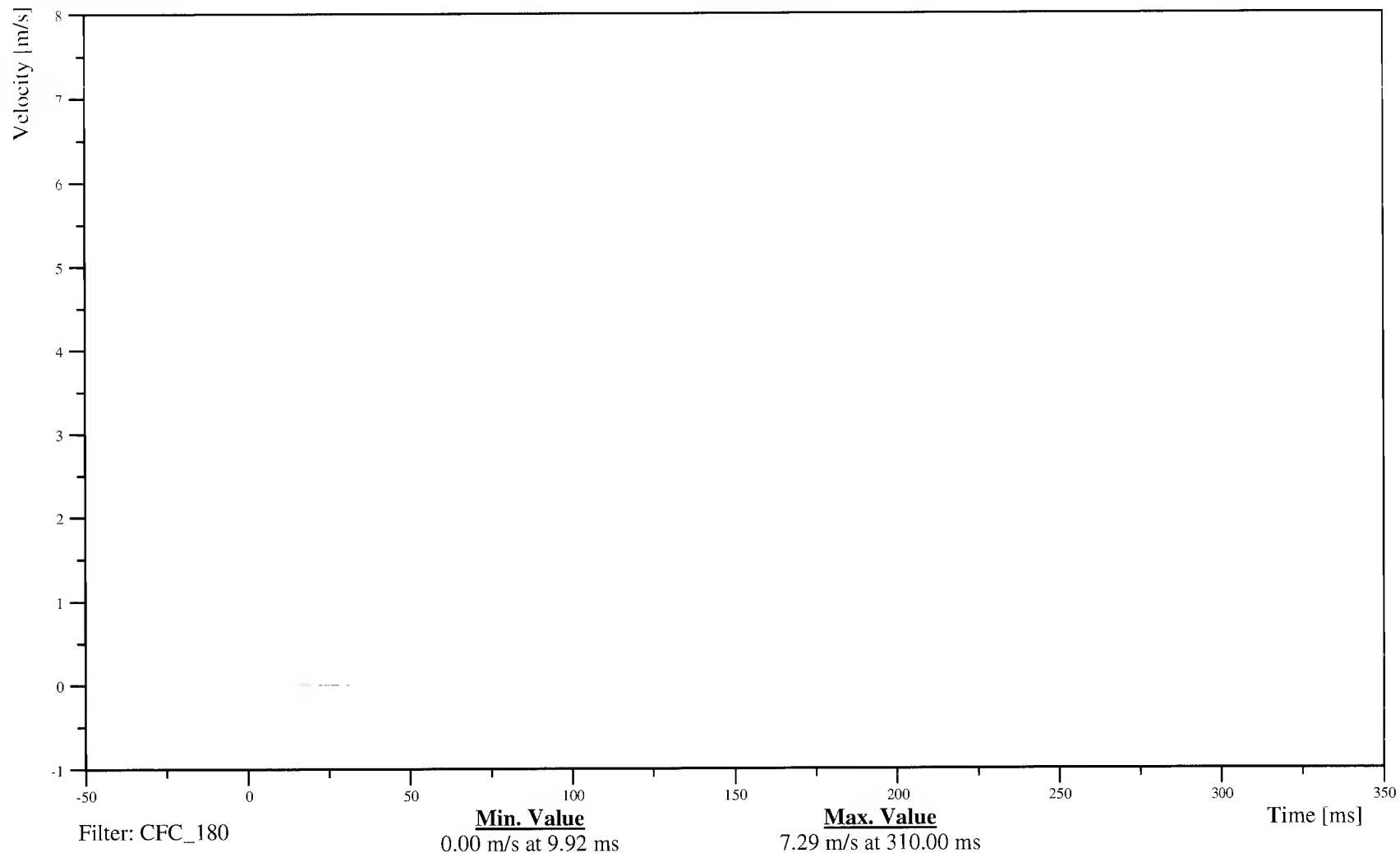
Customer: NHTSA

Test Number: C60106

### 11HEADCG00SHVEZC

TRC Inc. Test Lab: CTF

Test Number: 060320



B-14

060320

56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

Date: 03/20/2006

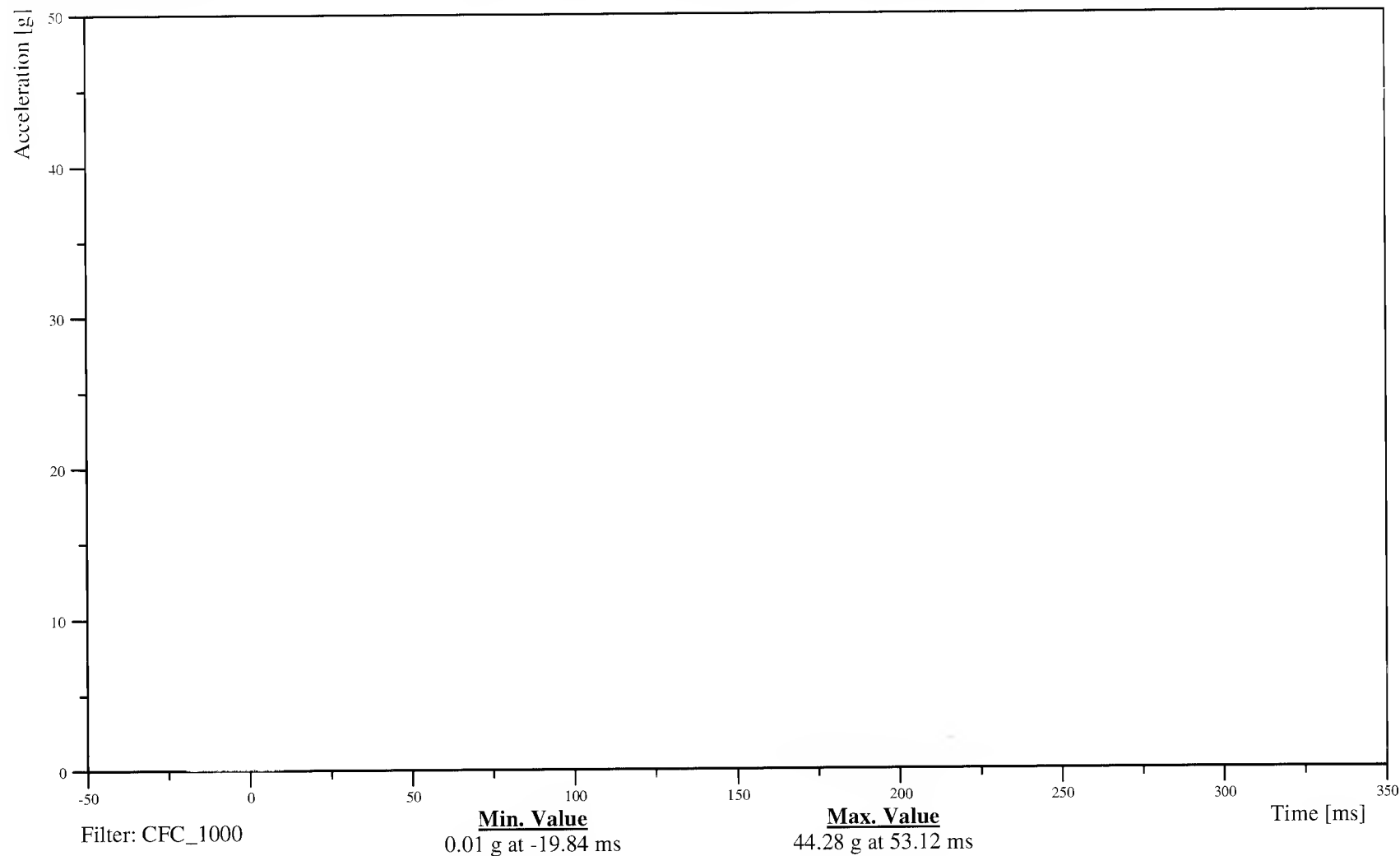
Time: 12:01

DRIVER HEAD RESULTANT ACCELERATION

Customer: NHTSA  
Test Number: C60106

11HEADCG00SHACRA

TRC Inc. Test Lab: CTF  
Test Number: 060320



B-15

060320



56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

Date: 03/20/2006

Time: 12:01

DRIVER NECK X-AXIS SHEAR FORCE

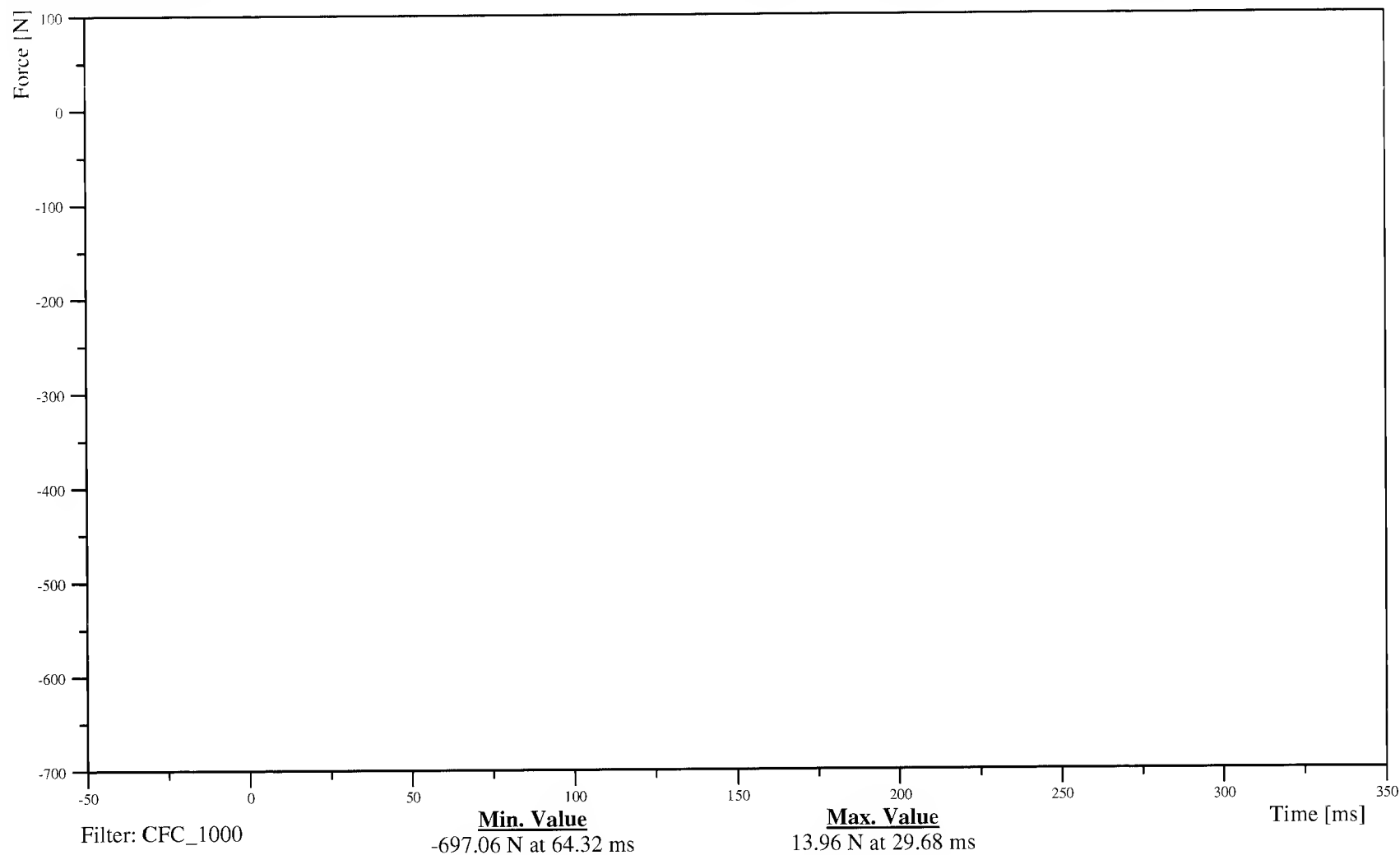
Customer: NHTSA

Test Number: C60106

11NECKUP00SHFOXA

TRC Inc. Test Lab: CTF

Test Number: 060320



B-16

060320

# 56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

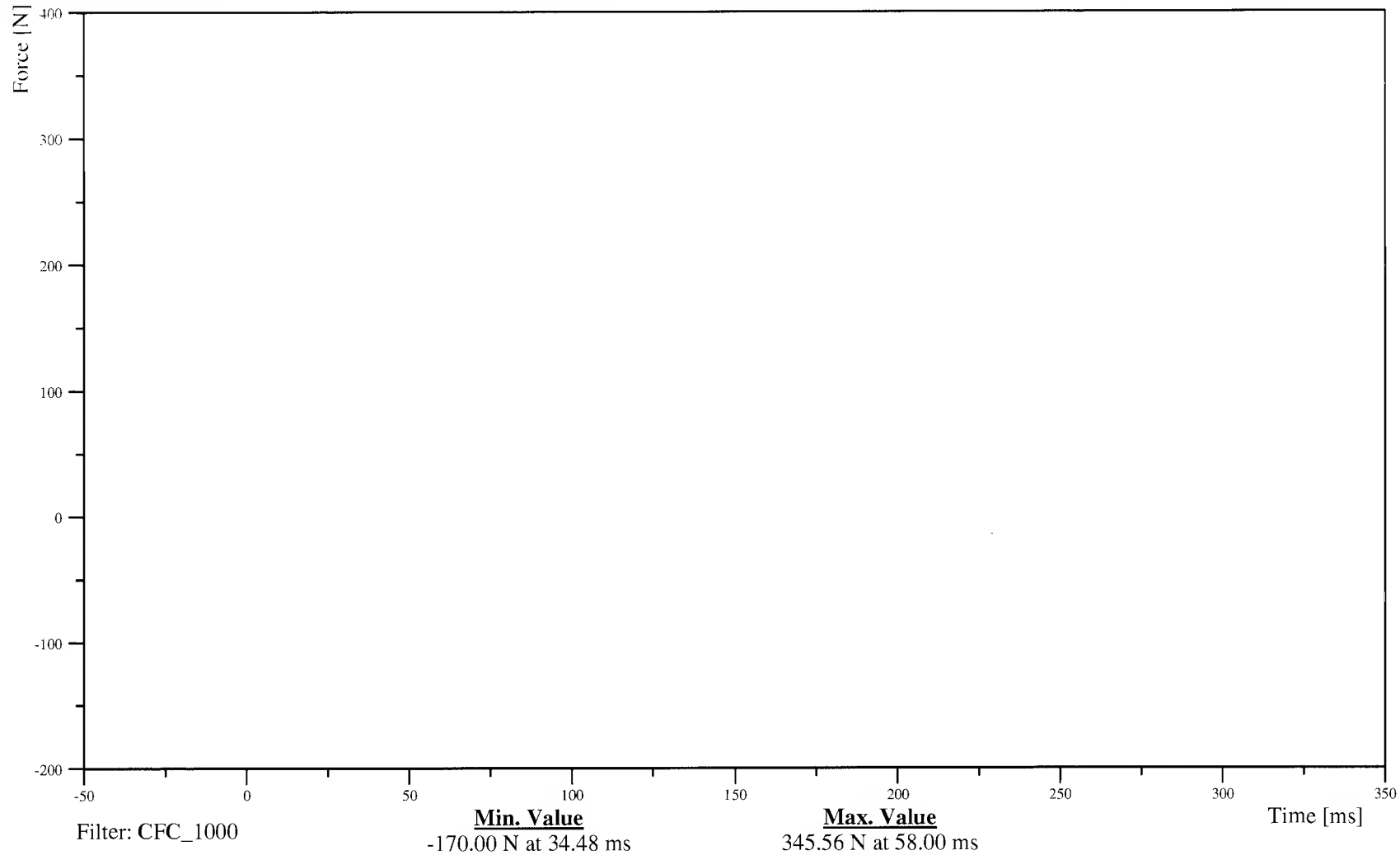
Date: 03/20/2006  
Time: 12:01

## DRIVER NECK Y-AXIS SHEAR FORCE

Customer: NHTSA  
Test Number: C60106

### 11NECKUP00SHFOYA

TRC Inc. Test Lab: CTF  
Test Number: 060320



B-17

060320

56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

Date: 03/20/2006

DRIVER NECK Z-AXIS AXIAL FORCE

Time: 12:01

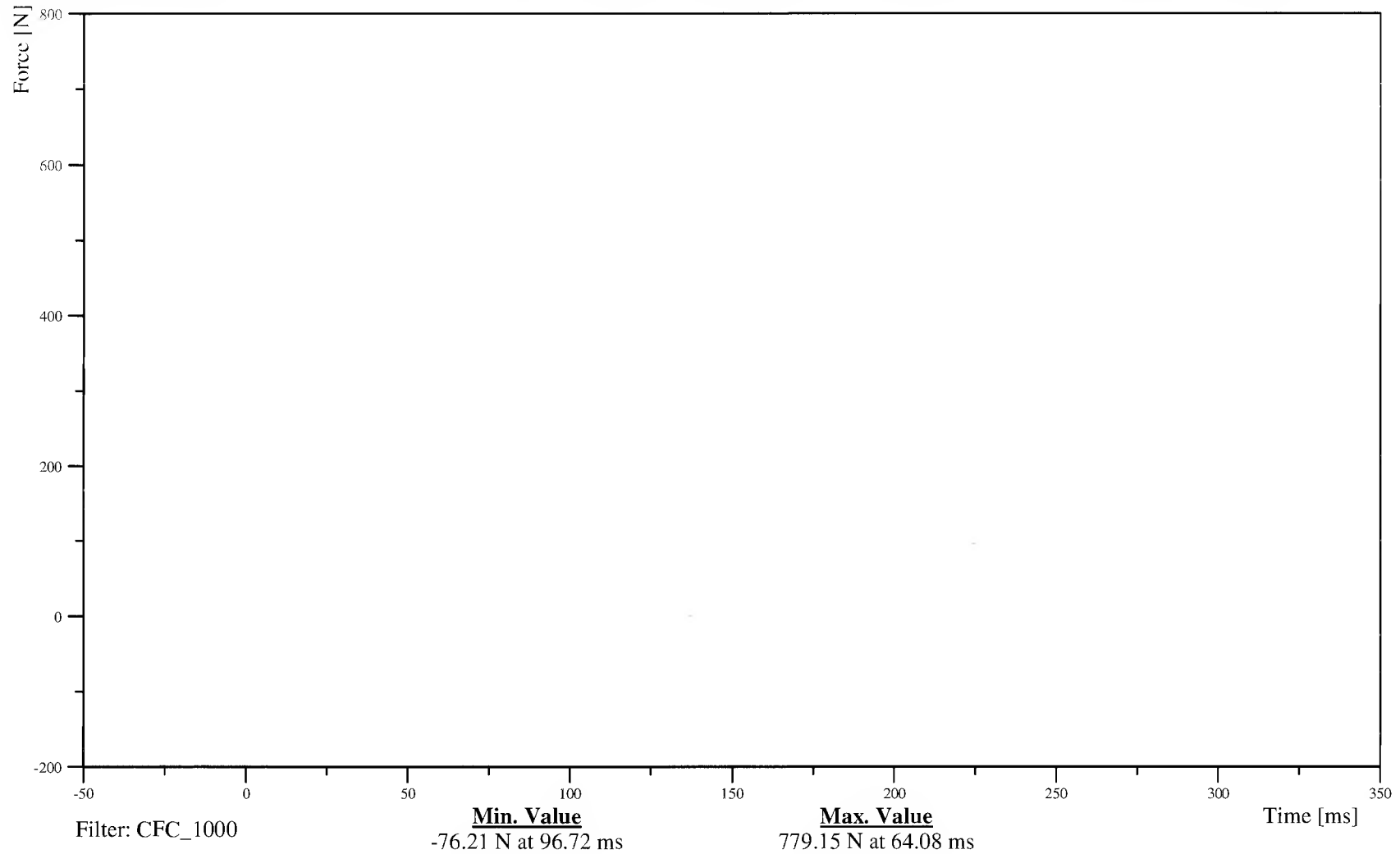
Customer: NHTSA

Test Number: C60106

11NECKUP00SHFOZA

TRC Inc. Test Lab: CTF

Test Number: 060320



B-18

060320



# 56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

Date: 03/20/2006

Time: 12:01

## DRIVER NECK MOMENT ABOUT X AXIS

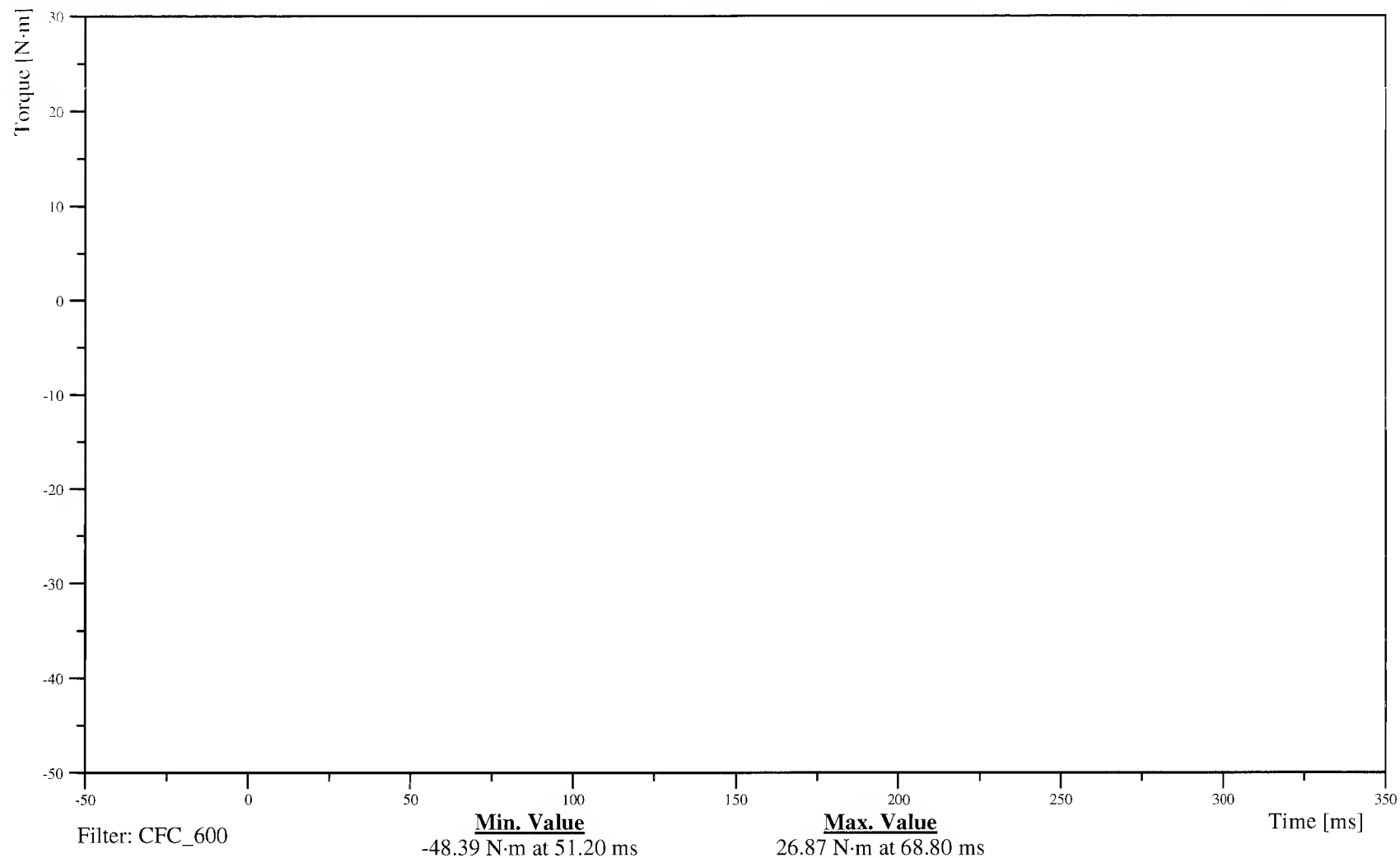
Customer: NHTSA

Test Number: C60106

### 11NECKUP00SHMOXB

TRC Inc. Test Lab: CTF

Test Number: 060320



B-19

060320

56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

Date: 03/20/2006

Time: 12:01

DRIVER NECK MOMENT ABOUT Y AXIS

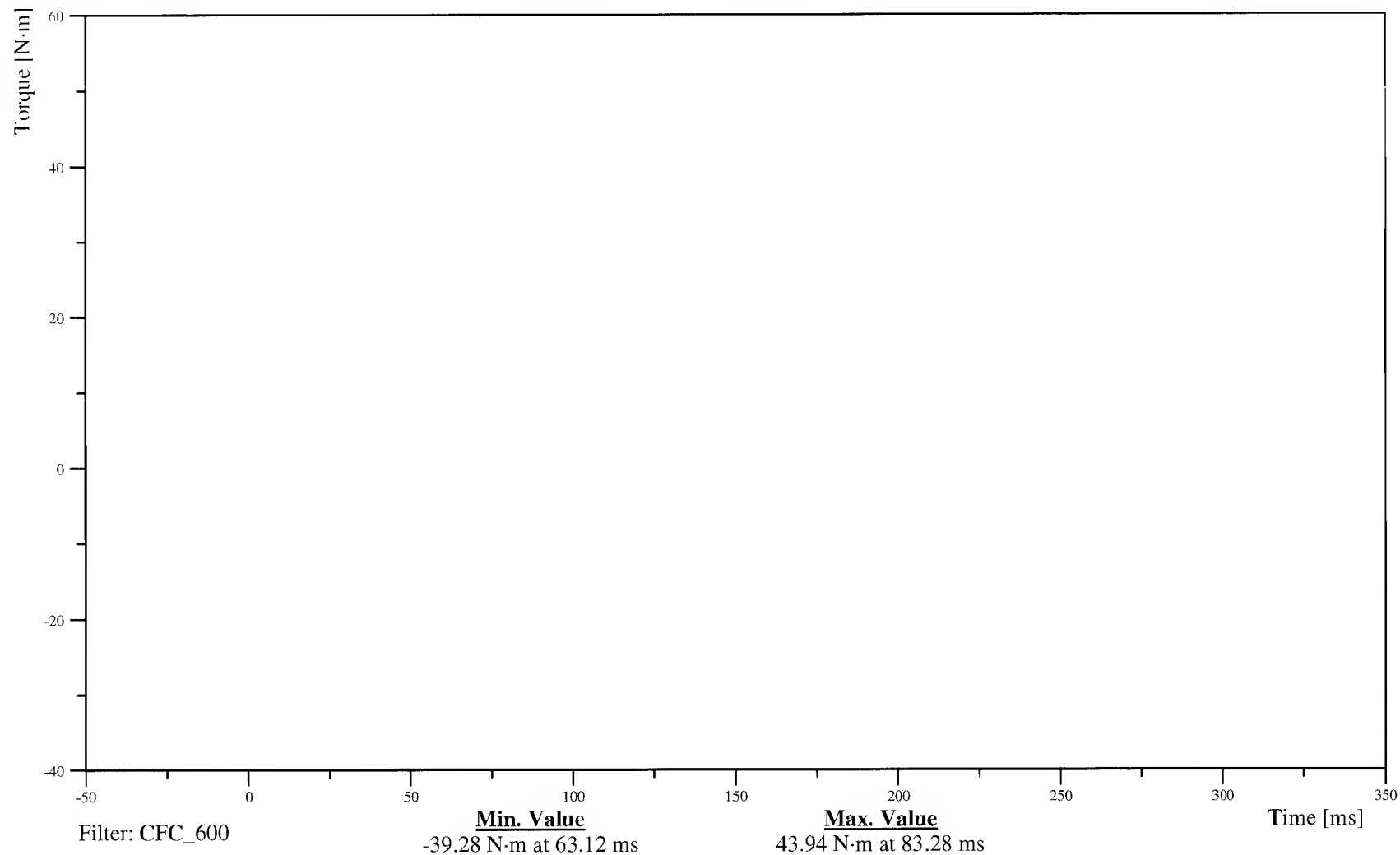
Customer: NHTSA

Test Number: C60106

11NECKUP00SHMOYB

TRC Inc. Test Lab: CTF

Test Number: 060320



B-20

060320

56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

Date: 03/20/2006

DRIVER NECK MOMENT ABOUT Z AXIS

Time: 12:01

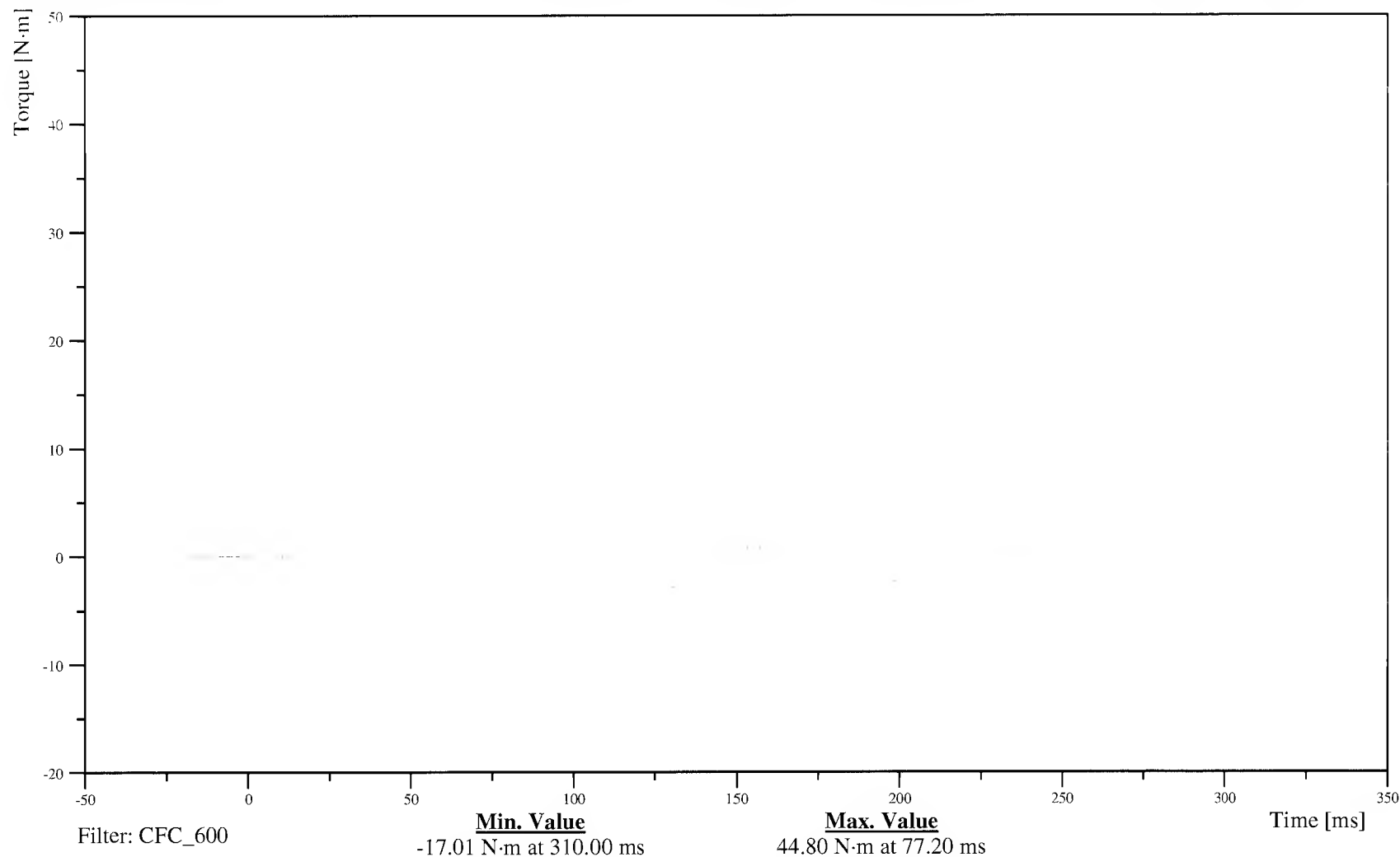
Customer: NHTSA

Test Number: C60106

11NECKUP00SHMOZB

TRC Inc. Test Lab: CTF

Test Number: 060320



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060320



# 56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

## Neck Moment about the Occipital Condyle (NECK OM)

Date: 03/20/2006  
Time: 12:01

Customer: NHTSA

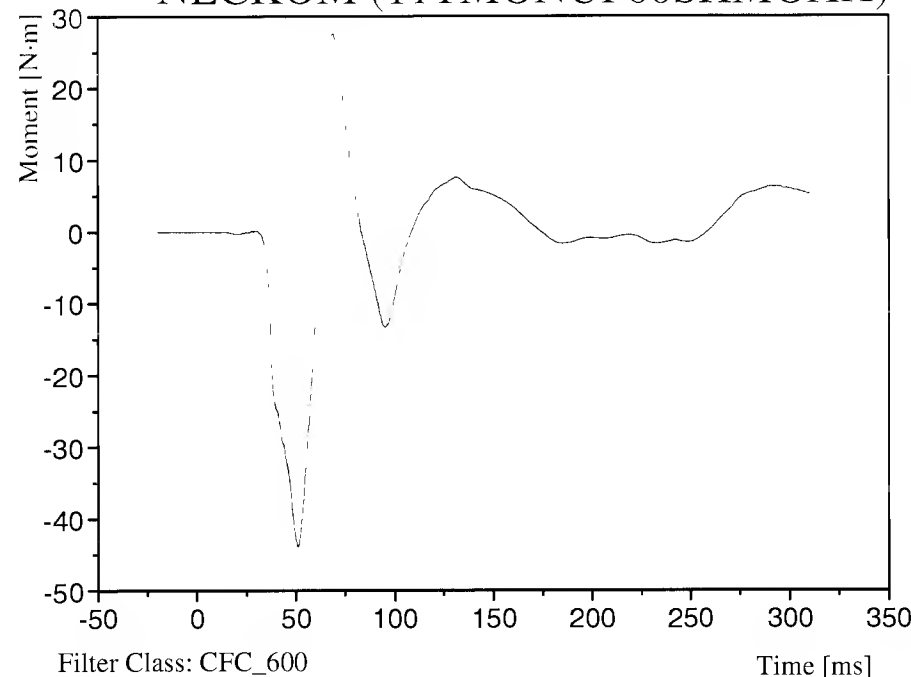
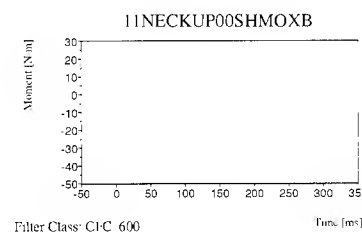
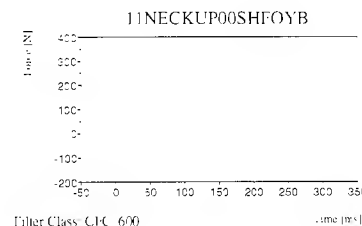
Test Number: C60106

Test Orientation = Side

TRC Inc. Test Lab: CTF

Test Number: 060320

NECKOM (11TMONUP00SHMOXX)



Dummy: HIII/SID  
Seating Position:  
Driver

Neck OM Source Code:  $M_x + (D \cdot F_y)$

[Max.] 27.66 N·m at 68.88 ms

[Min.] -43.87 N·m at 50.96 ms

56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

Date: 03/20/2006

Time: 12:01

DRIVER UPPER RIB Y-AXIS ACCELERATION

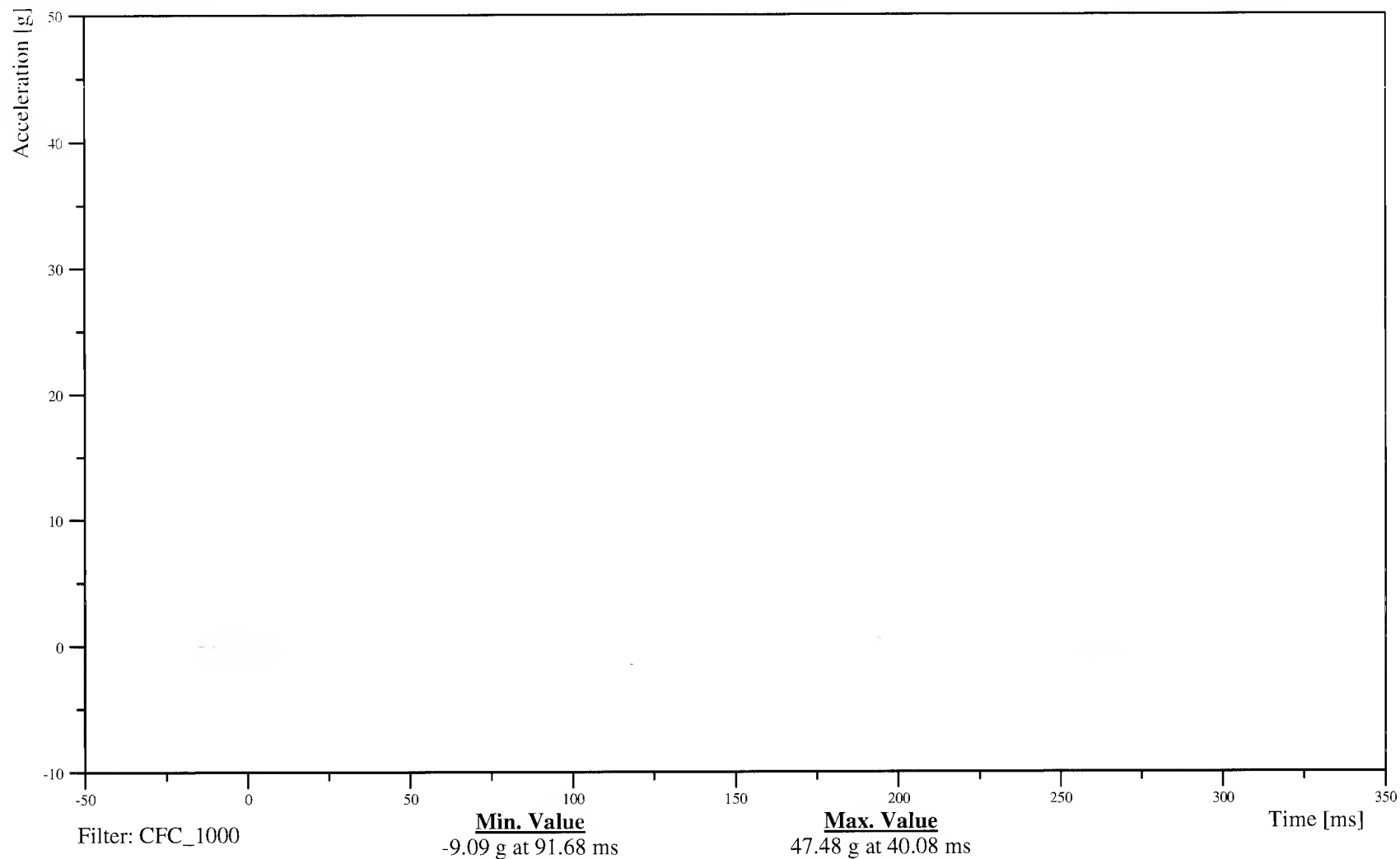
Customer: NHTSA

Test Number: C60106

11RIBSLU00SHACYA

TRC Inc. Test Lab: CTF

Test Number: 060320



B-23

060320

56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

DRIVER UPPER RIB Y-AXIS VELOCITY

Date: 03/20/2006

Time: 12:01

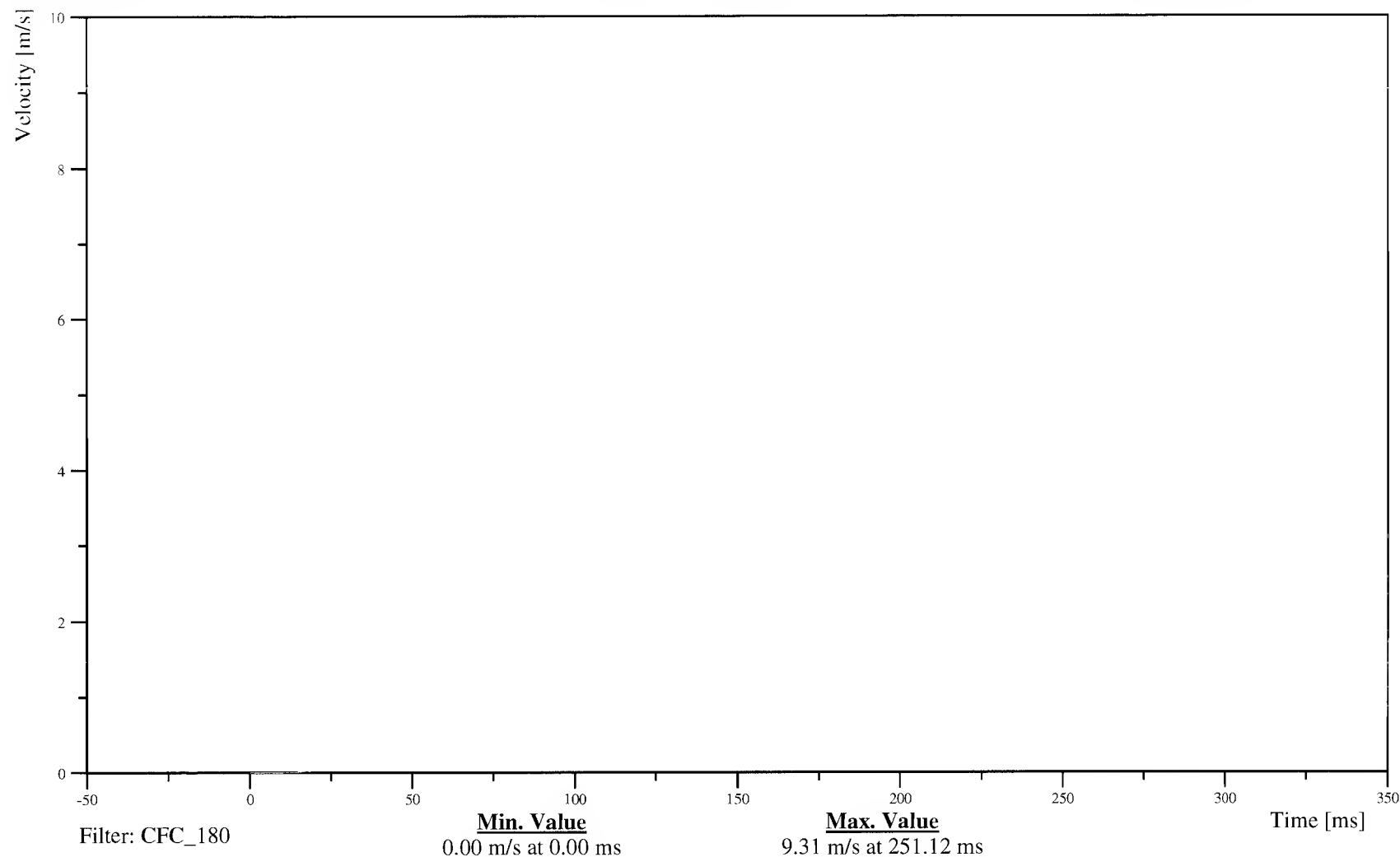
Customer: NHTSA

Test Number: C60106

11RIBSLU00SHVEYC

TRC Inc. Test Lab: CTF

Test Number: 060320



B-24

060320

56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

Date: 03/20/2006

DRIVER LOWER RIB Y-AXIS ACCELERATION

Time: 12.01

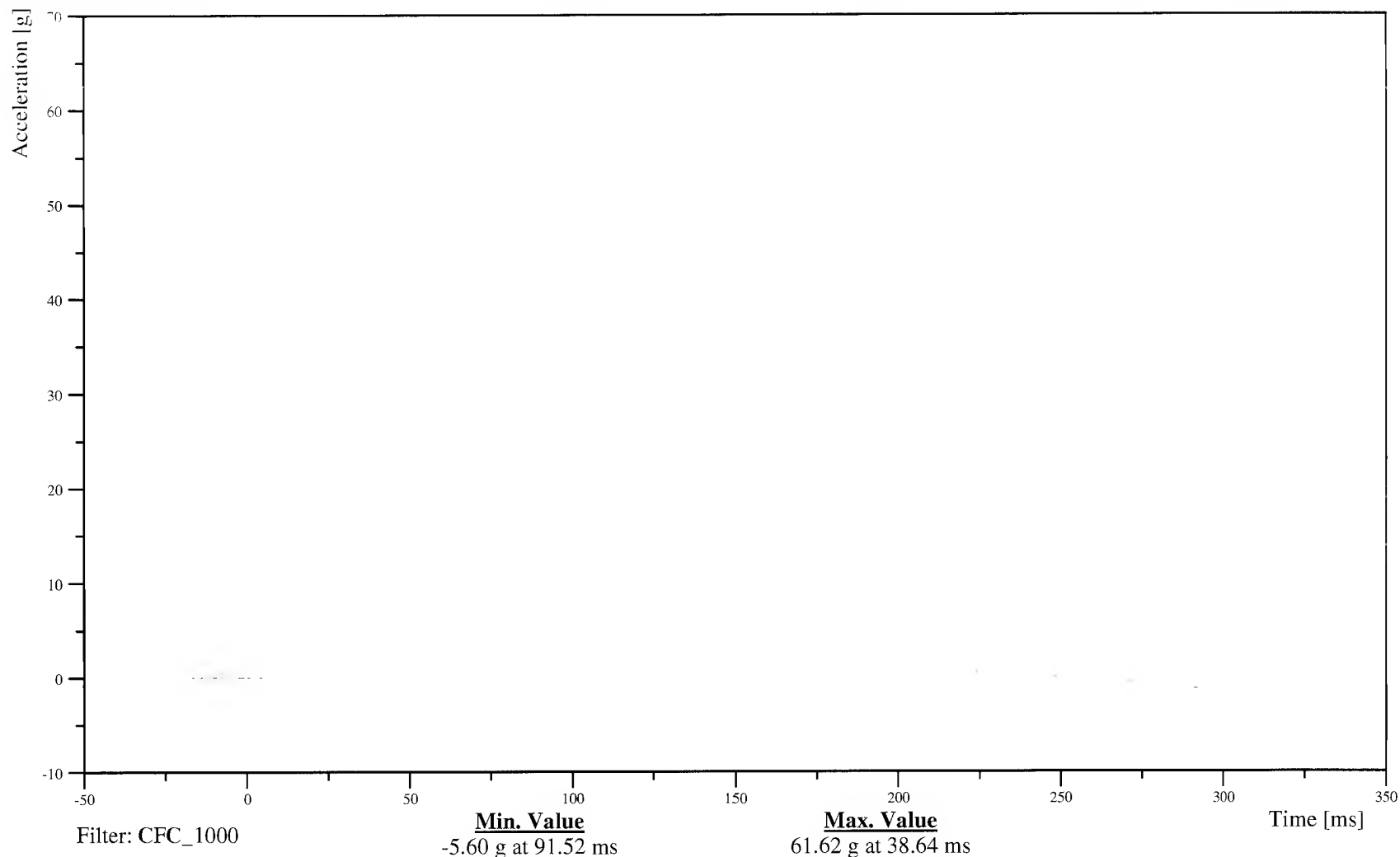
Customer: NHTSA

Test Number: C60106

11RIBSLL00SHACYA

TRC Inc. Test Lab: CTF

Test Number: 060320



B-25

060320



# 56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

Date: 03/20/2006

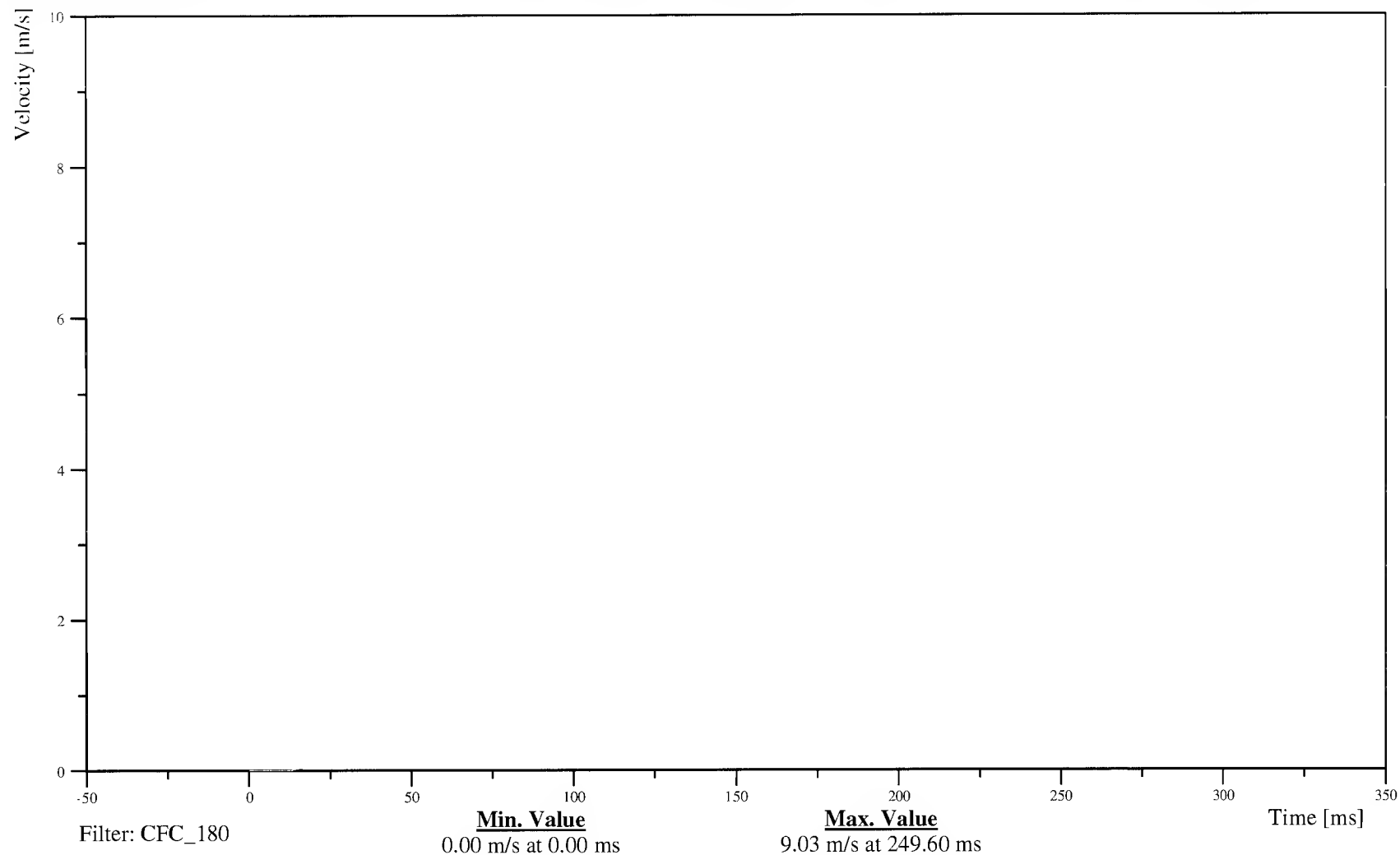
Time: 12:01

## DRIVER LOWER RIB Y-AXIS VELOCITY

Customer: NHTSA  
Test Number: C60106

### 11RIBSLL00SHVEYC

TRC Inc. Test Lab: CTF  
Test Number: 060320



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060320

56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

Date: 03/20/2006

Time: 12:01

DRIVER LOWER SPINE Y-AXIS ACCELERATION

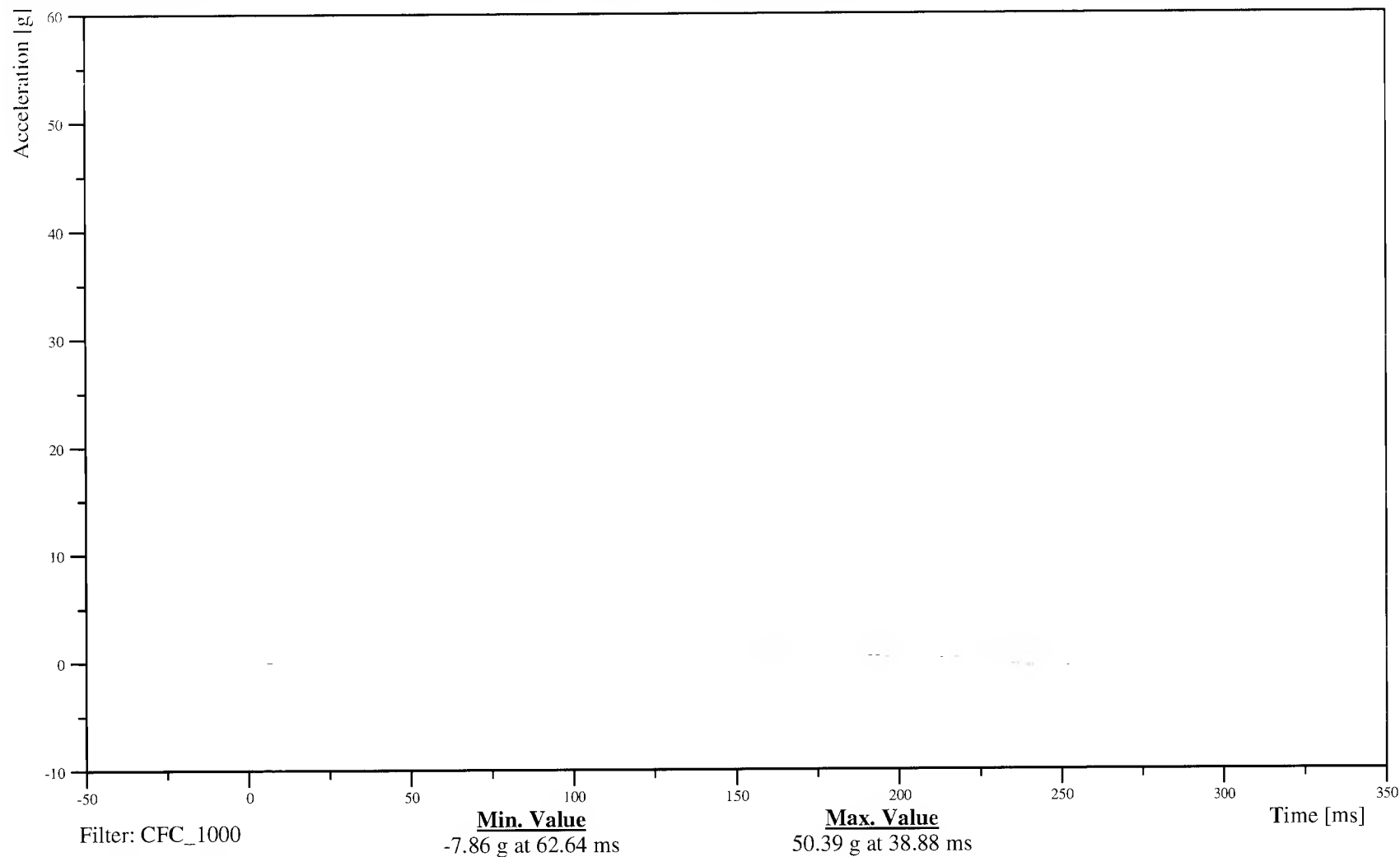
Customer: NHTSA

Test Number: C60106

11SPIN1200SHACYA

TRC Inc. Test Lab: CTF

Test Number: 060320



B-27

060320

56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

DRIVER LOWER SPINE Y-AXIS VELOCITY

Date: 03/20/2006

Time: 12.01

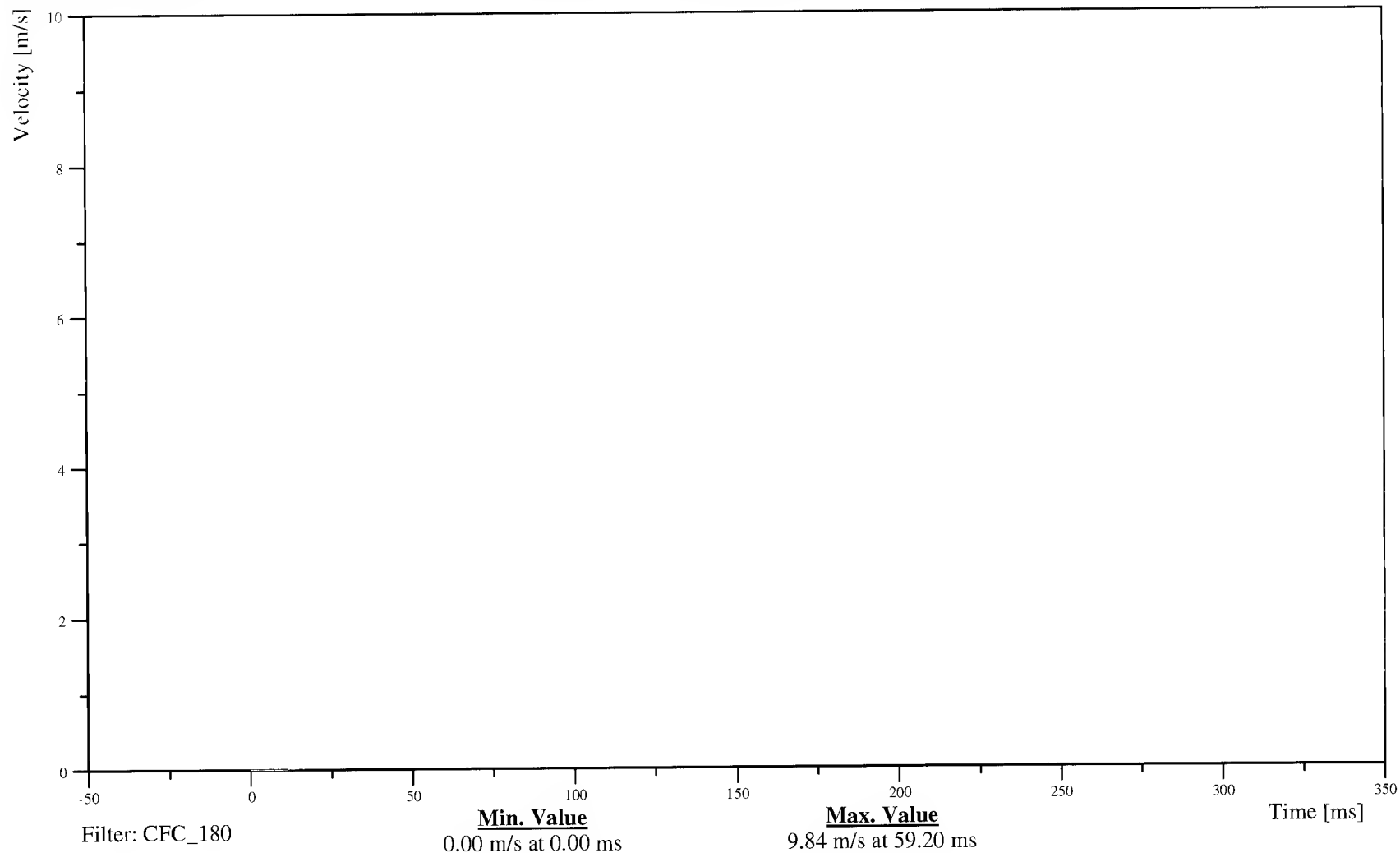
Customer: NHTSA

Test Number: C60106

11SPIN1200SHVEYC

TRC Inc. Test Lab: CTF

Test Number: 060320



B-28

060320

56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

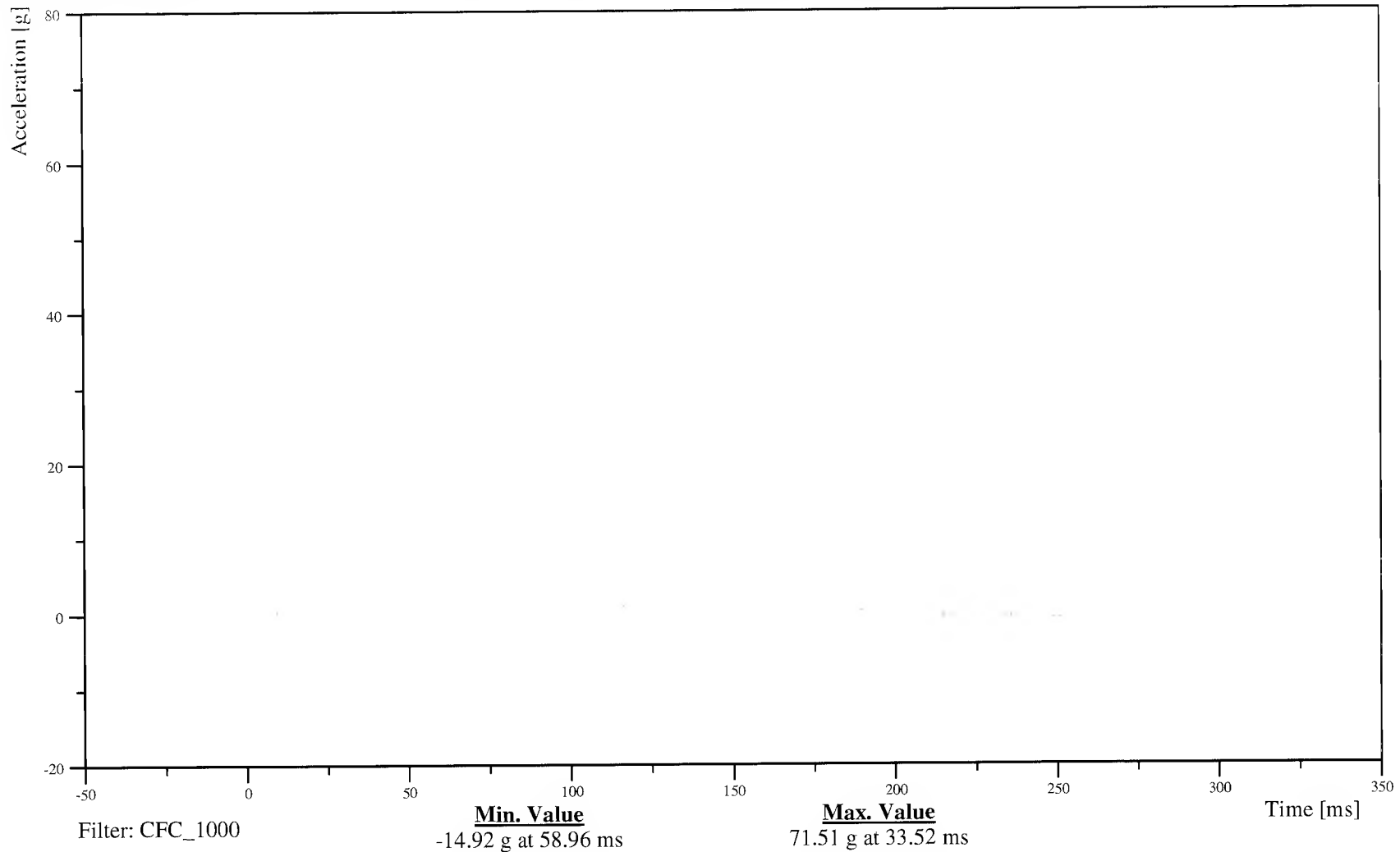
Date: 03/20/2006  
Time: 12:01

DRIVER PELVIS Y-AXIS ACCELERATION

Customer: NHTSA  
Test Number: C60106

11PELVCG00SHACYA

TRC Inc. Test Lab: CTF  
Test Number: 060320





56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

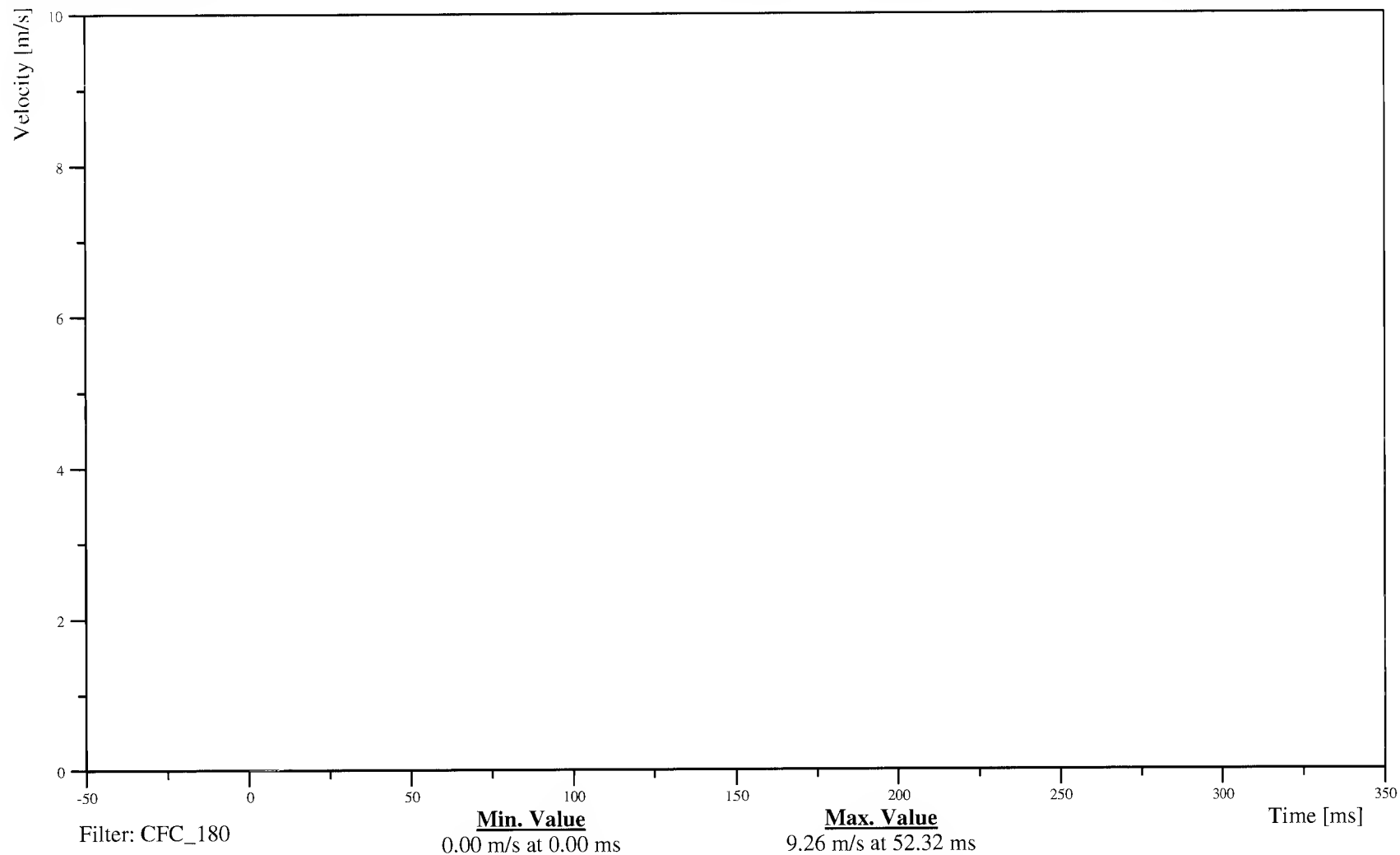
DRIVER PELVIS Y-AXIS VELOCITY

Date: 03/20/2006  
Time: 12:01

Customer: NHTSA  
Test Number: C60106

11PELVCG00SHVEYC

TRC Inc. Test Lab: CTF  
Test Number: 060320



B-30

060320

56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

Date: 03/20/2006

Time: 12:01

LEFT REAR PASSENGER HEAD X-AXIS ACCELERATION

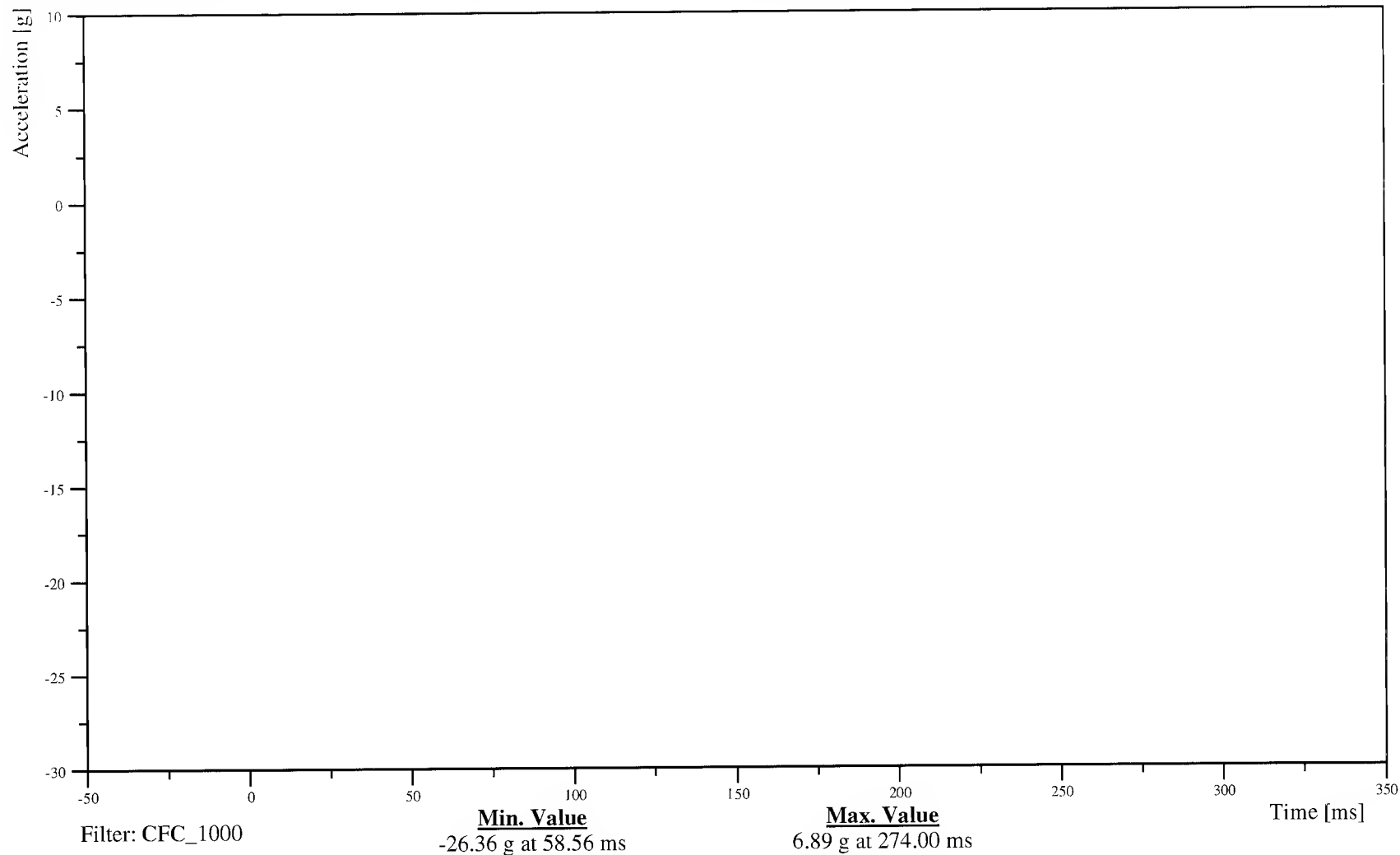
Customer: NHTSA

Test Number: C60106

14HEADCG00SHACXA

TRC Inc. Test Lab: CTF

Test Number: 060320



B-31

060320

56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

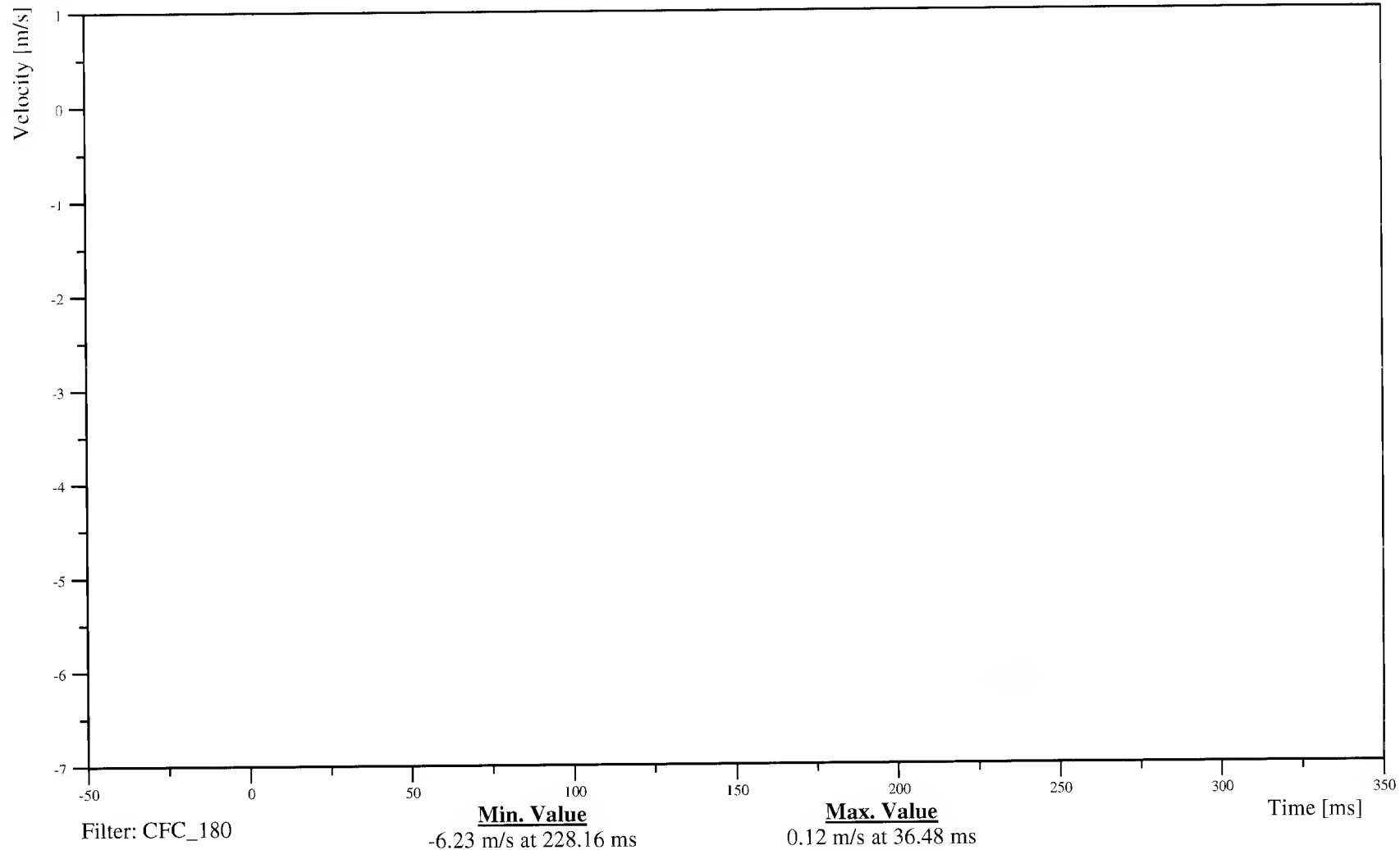
Date: 03/20/2006  
Time: 12:01

LEFT REAR PASSENGER HEAD X-AXIS VELOCITY

Customer: NHTSA  
Test Number: C60106

14HEADCG00SHVEXC

TRC Inc. Test Lab: CTF  
Test Number: 060320



B-32

060320

56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

Date: 03/20/2006

LEFT REAR PASSENGER HEAD Y-AXIS ACCELERATION

Time: 12:01

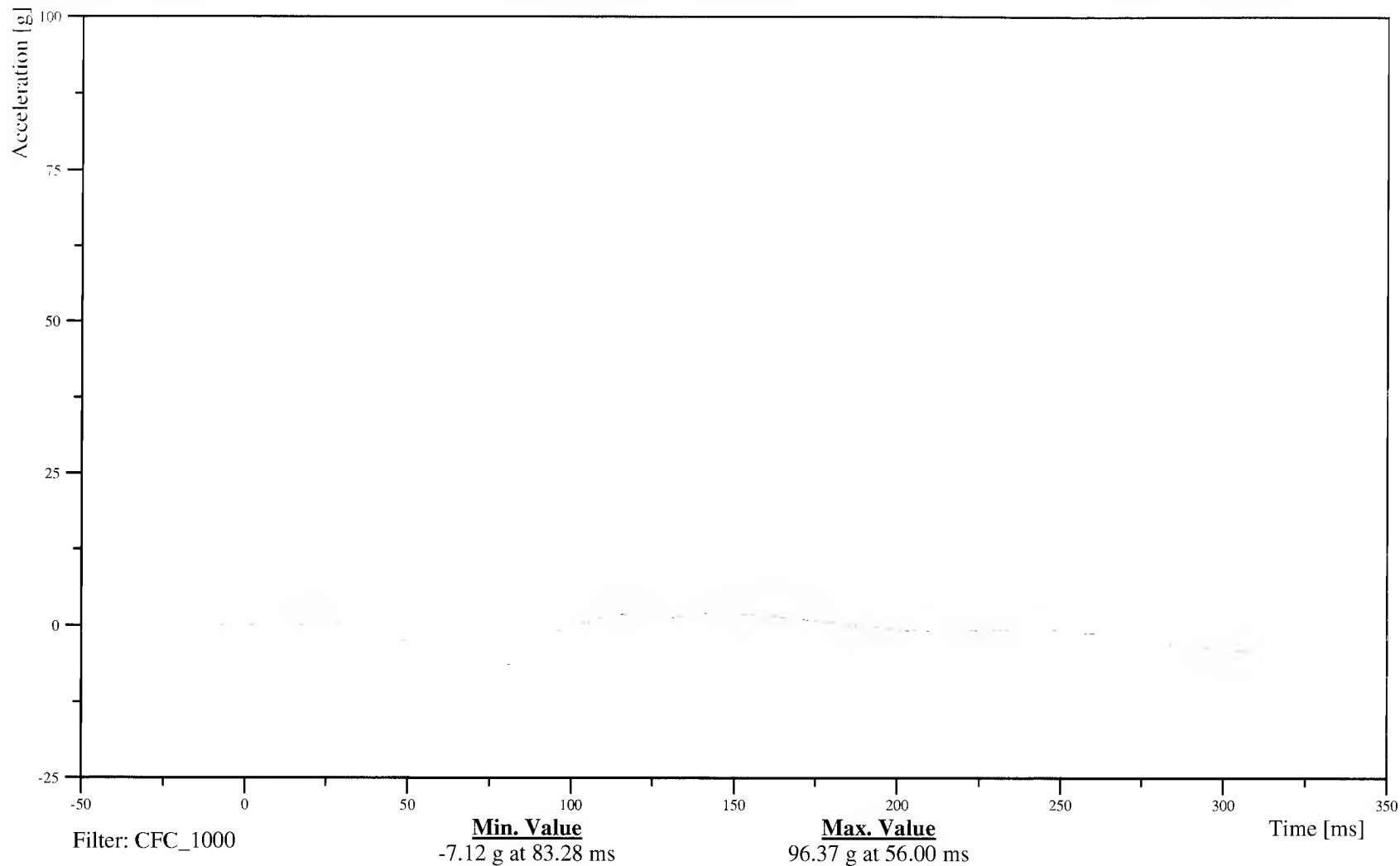
Customer: NHTSA

Test Number: C60106

14HEADCG00SHACYA

TRC Inc. Test Lab: CTF

Test Number: 060320



B-33

060320



56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

Date: 03/20/2006

Time: 12:01

LEFT REAR PASSENGER HEAD Y-AXIS VELOCITY

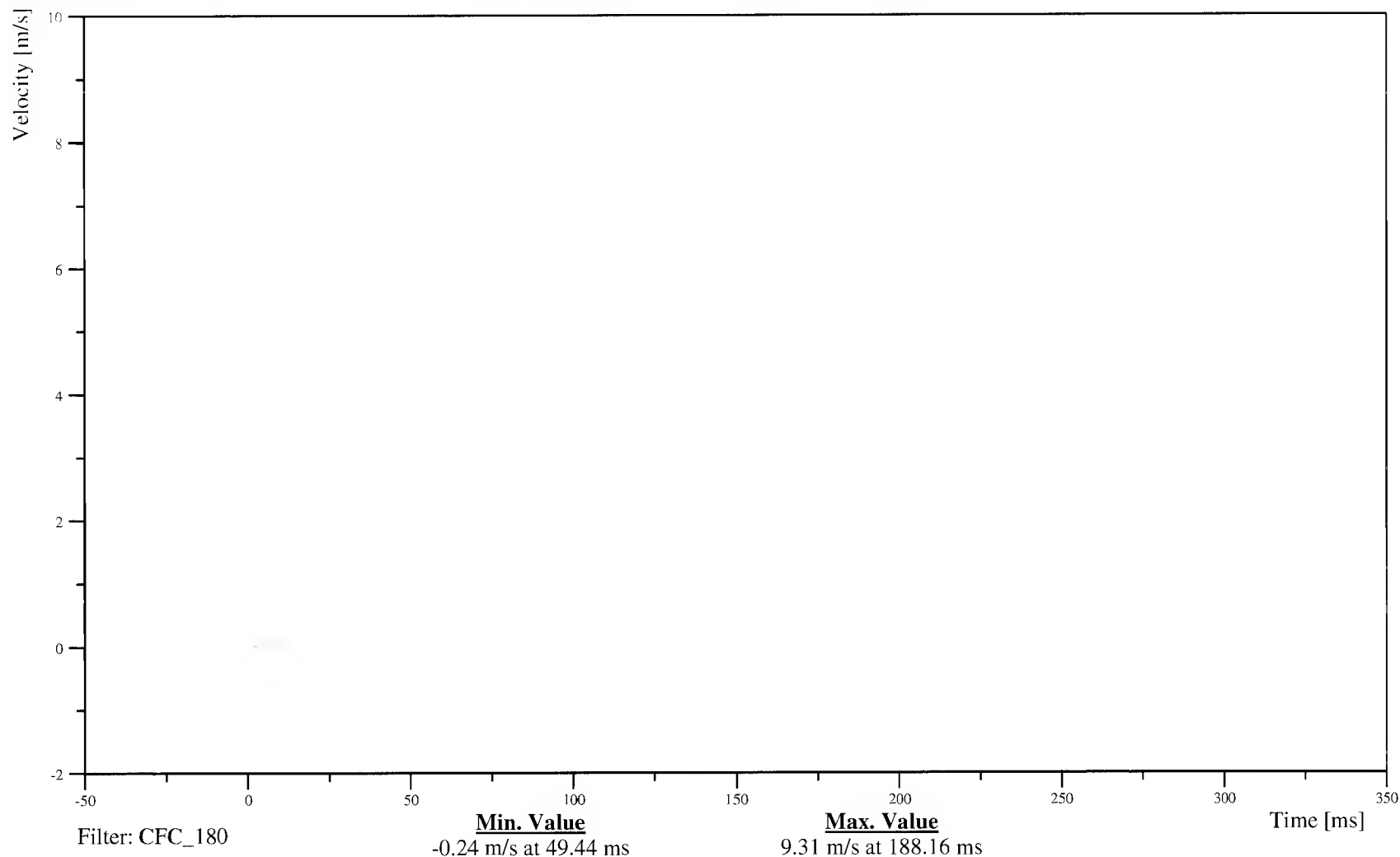
Customer: NHTSA

Test Number: C60106

14HEADCG00SHVEYC

TRC Inc. Test Lab: CTF

Test Number: 060320



B-34

060320

56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

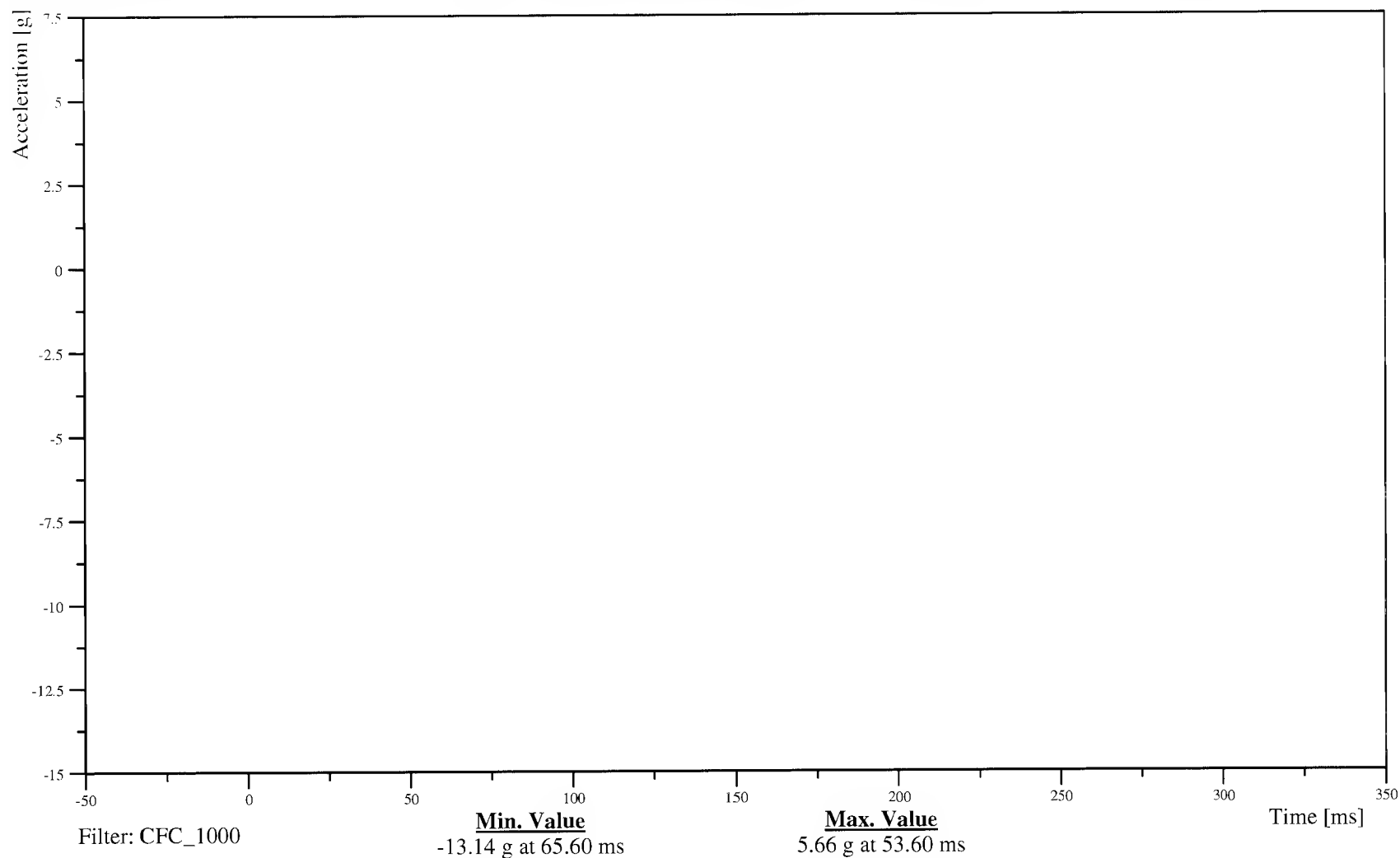
Date: 03/20/2006  
Time: 12:01

LEFT REAR PASSENGER HEAD Z-AXIS ACCELERATION

Customer: NHTSA  
Test Number: C60106

14HEADCG00SHACZA

TRC Inc. Test Lab: CTF  
Test Number: 060320



B-35

060320

56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

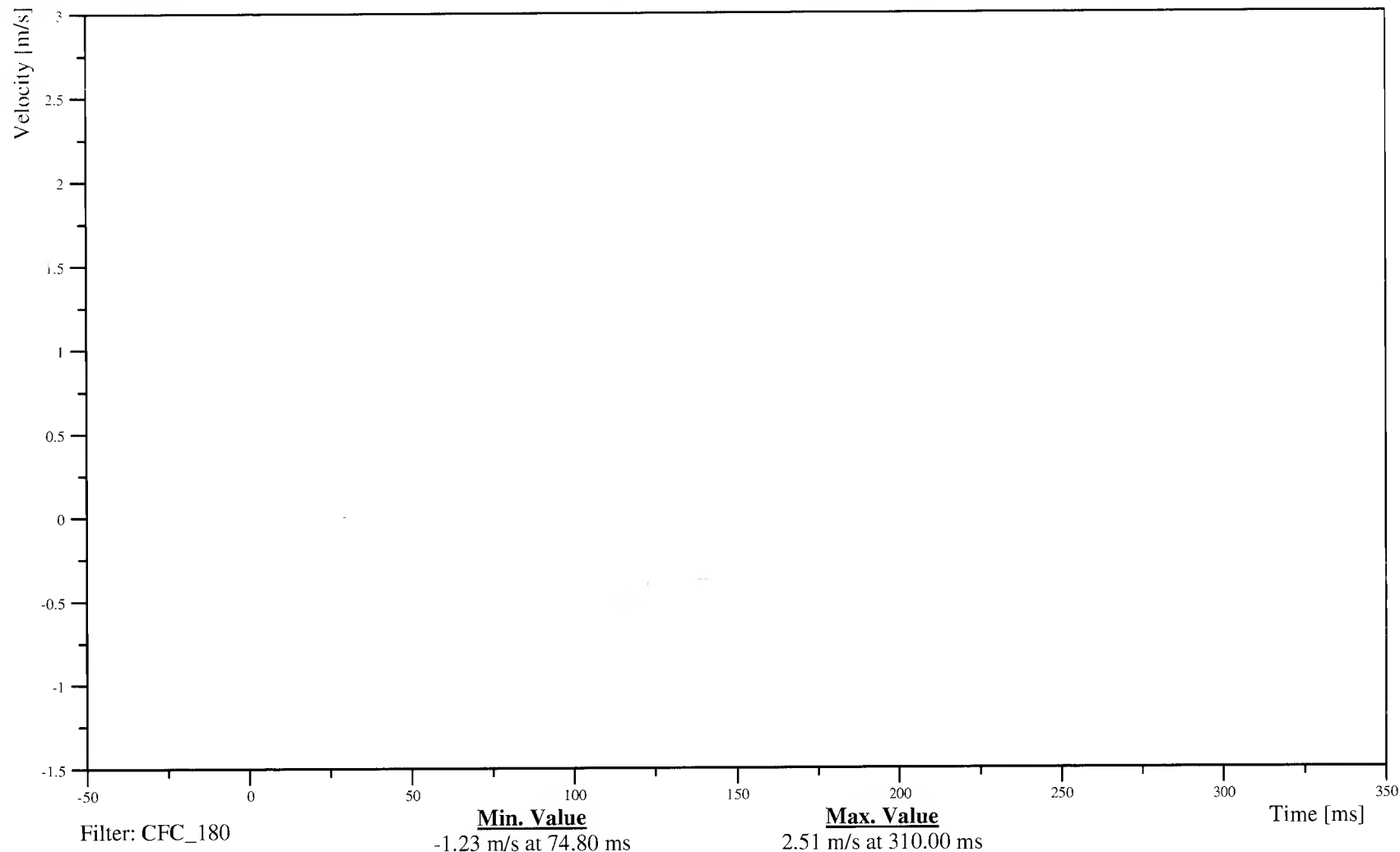
Date: 03/20/2006  
Time: 12:01

LEFT REAR PASSENGER HEAD Z-AXIS VELOCITY

Customer: NHTSA  
Test Number: C60106

14HEADCG00SHVEZC

TRC Inc. Test Lab: CTF  
Test Number: 060320



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060320

56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

Date: 03/20/2006

Time: 12:01

LEFT REAR PASSENGER HEAD RESULTANT ACCELERATION

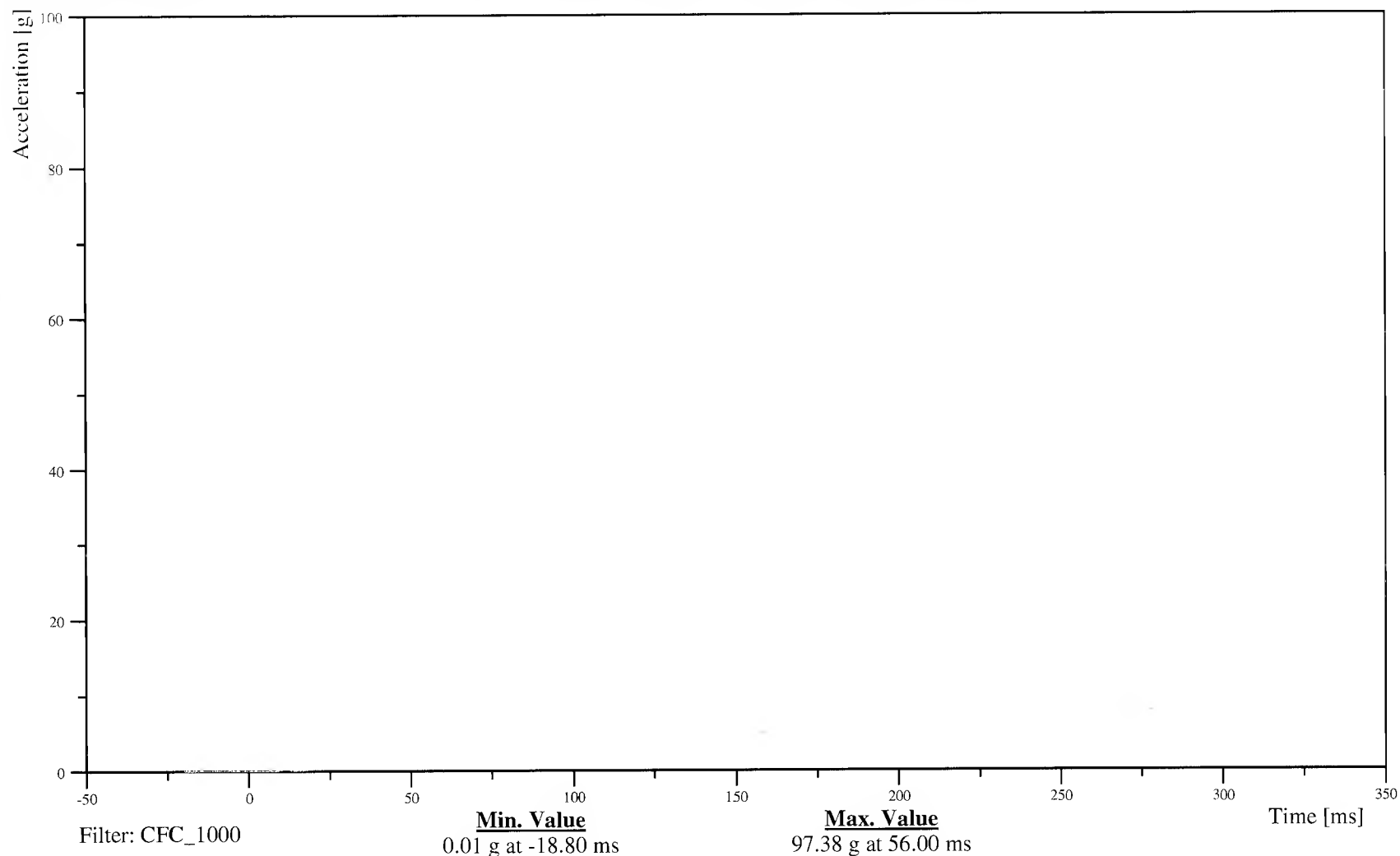
Customer: NHTSA

Test Number: C60106

14HEADCG00SHACRA

TRC Inc. Test Lab: CTF

Test Number: 060320



B-37

060320



56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

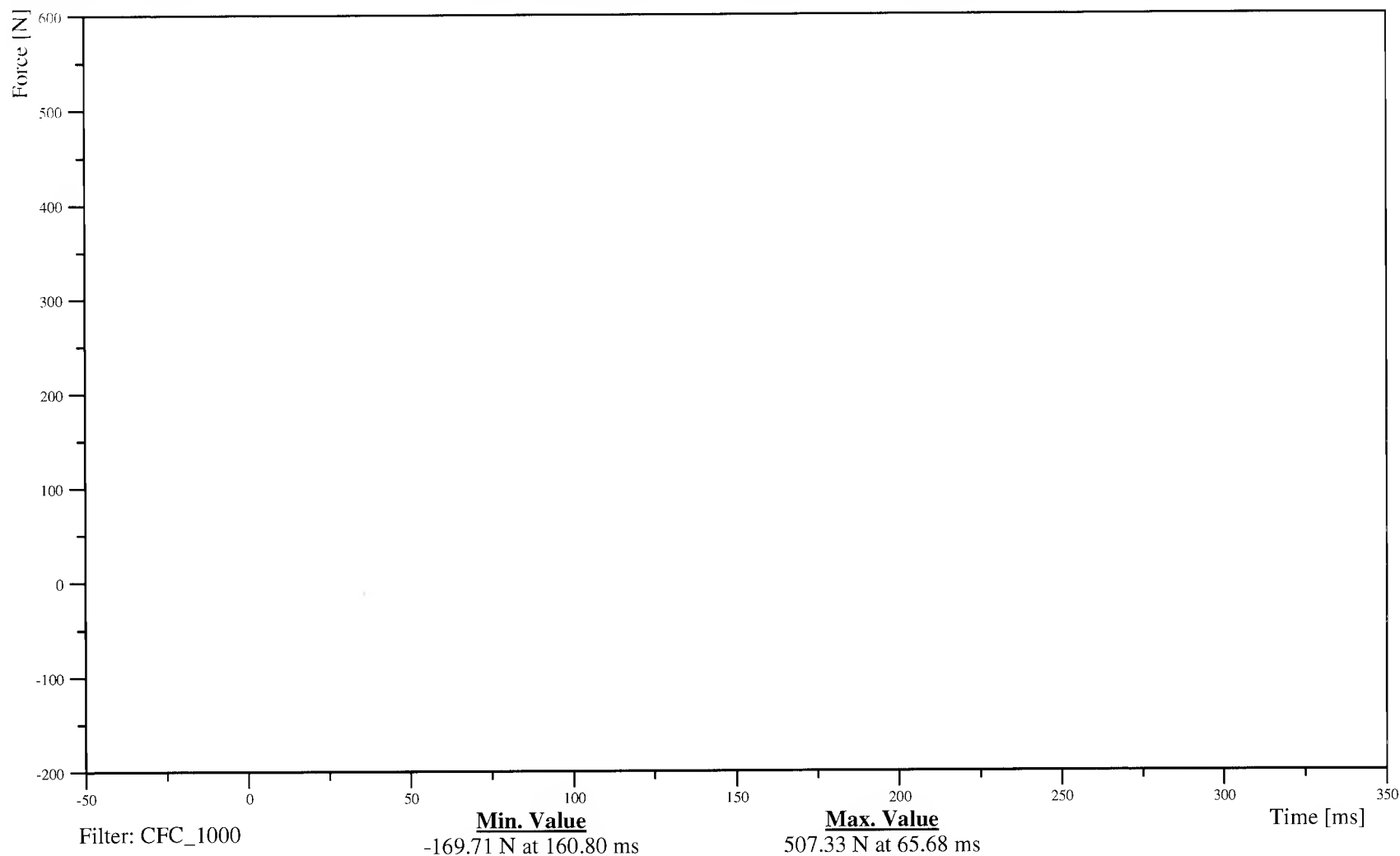
Date: 03/20/2006  
Time: 12:01

LEFT REAR PASSENGER NECK X-AXIS SHEAR FORCE

Customer: NHTSA  
Test Number: C60106

14NECKUP00SHFOXA

TRC Inc. Test Lab: CTF  
Test Number: 060320



B-38

060320

56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

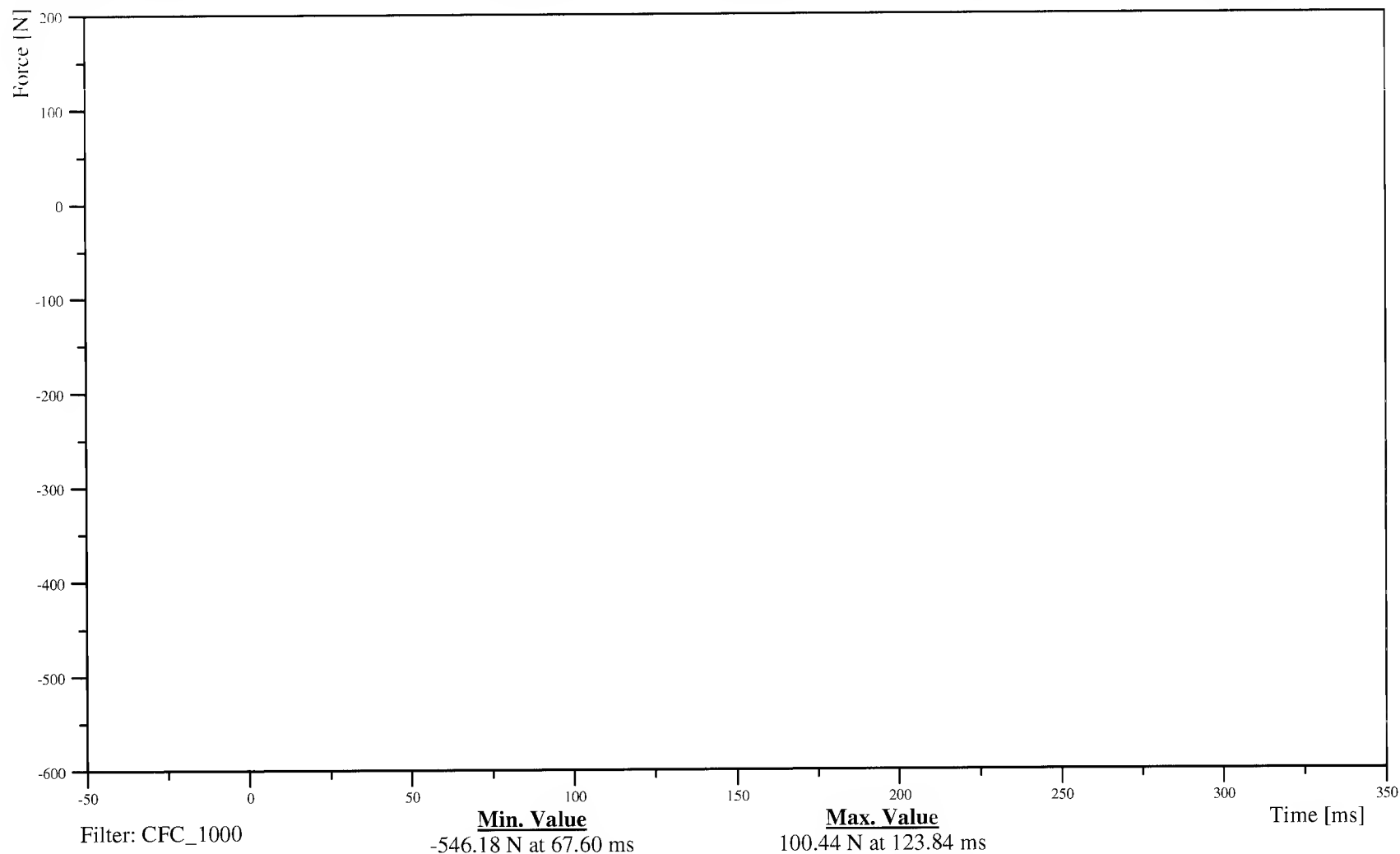
Date: 03/20/2006  
Time: 12:01

LEFT REAR PASSENGER NECK Y-AXIS SHEAR FORCE

Customer: NHTSA  
Test Number: C60106

14NECKUP00SHFOYA

TRC Inc. Test Lab: CTF  
Test Number: 060320



B-39

060320

56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

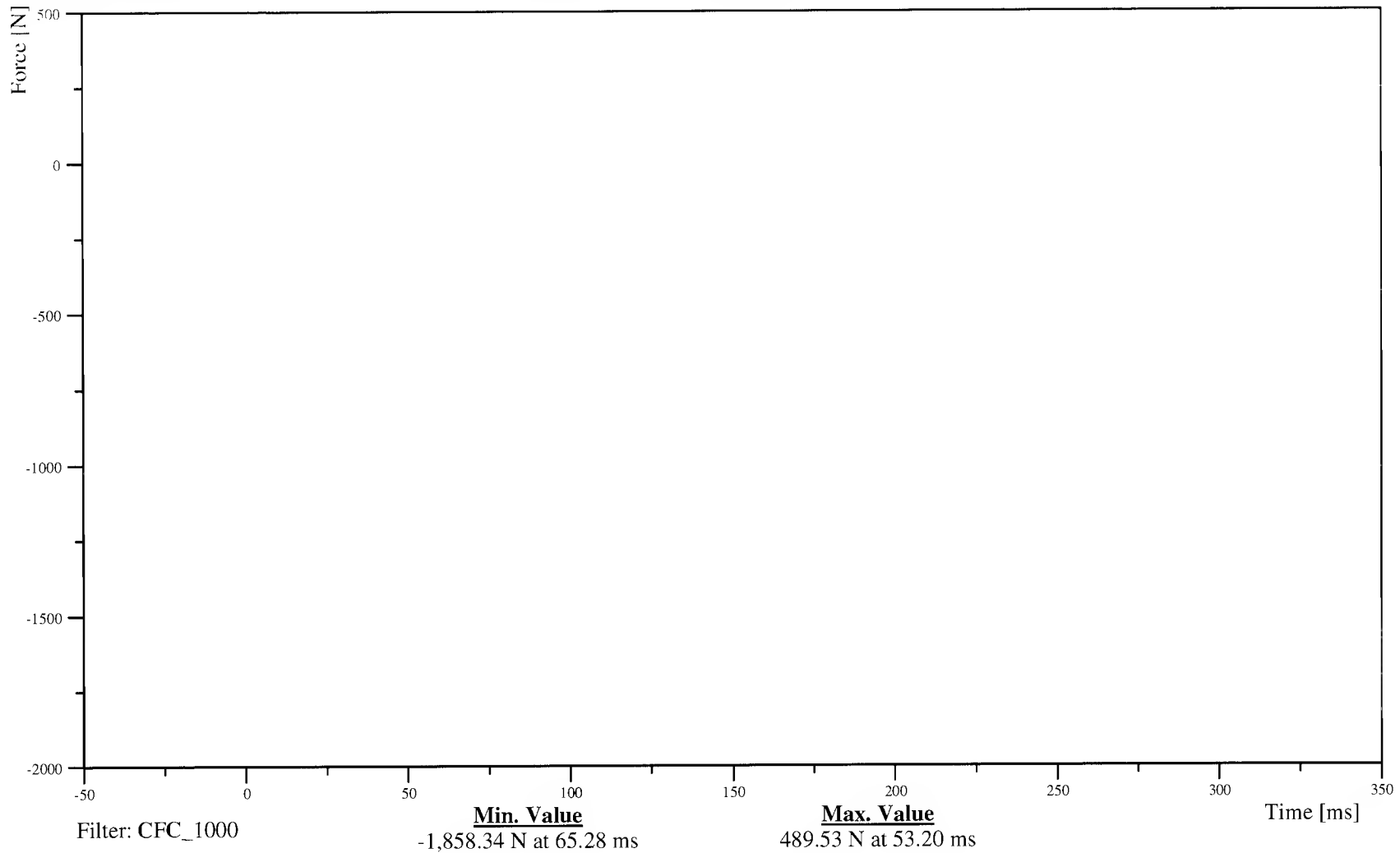
LEFT REAR PASSENGER NECK Z-AXIS AXIAL FORCE

Date: 03/20/2006  
Time: 12:01

Customer: NHTSA  
Test Number: C60106

14NECKUP00SHFOZA

TRC Inc. Test Lab: CTF  
Test Number: 060320



B-40

060320

56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

Date: 03/20/2006  
Time: 12:01

LEFT REAR PASSENGER NECK MOMENT ABOUT X AXIS

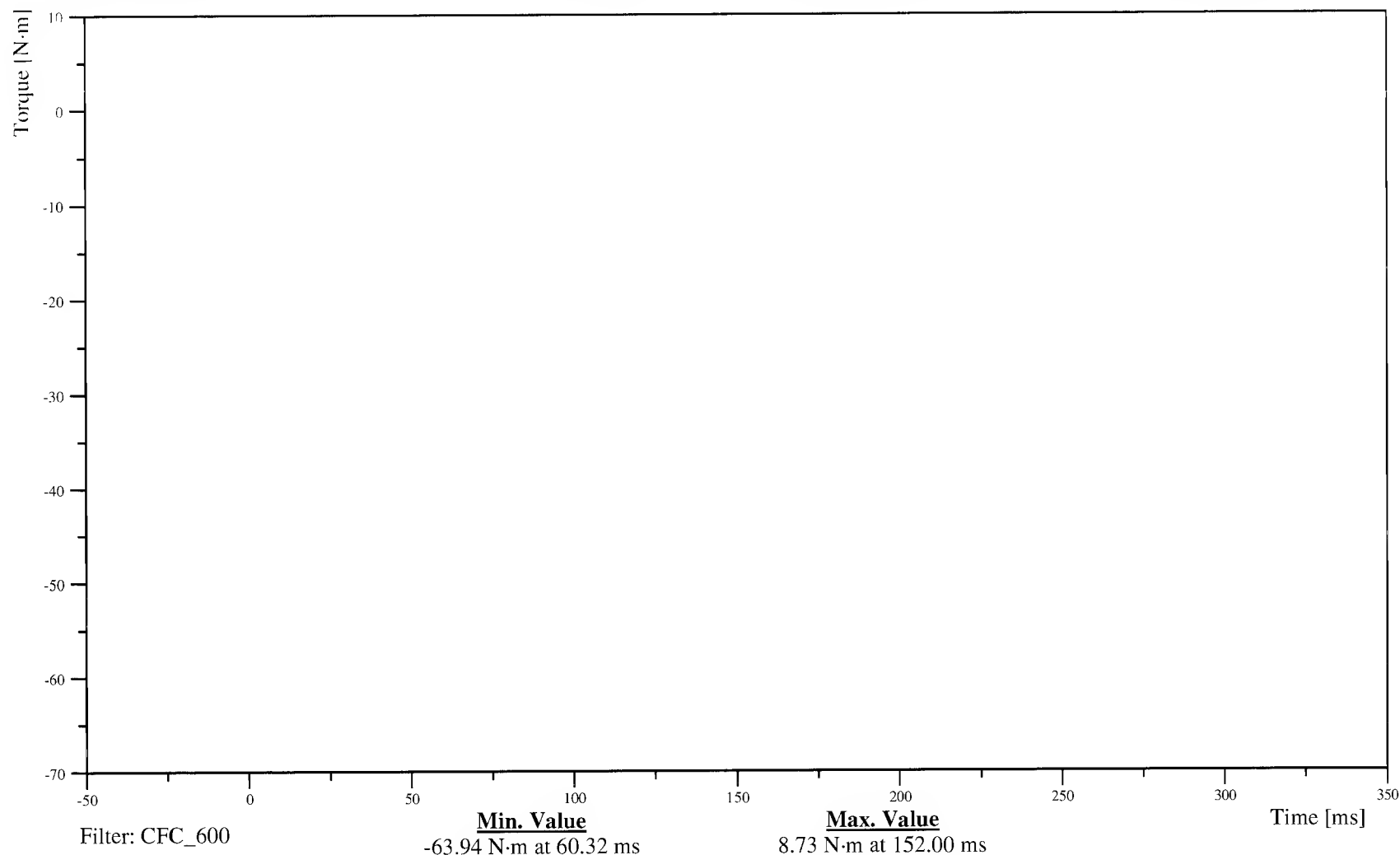
Customer: NHTSA

Test Number: C60106

14NECKUP00SHMOXB

TRC Inc. Test Lab: CTF

Test Number: 060320



B-41

060320



56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

Date: 03/20/2006

Time: 12:01

LEFT REAR PASSENGER NECK MOMENT ABOUT Y AXIS

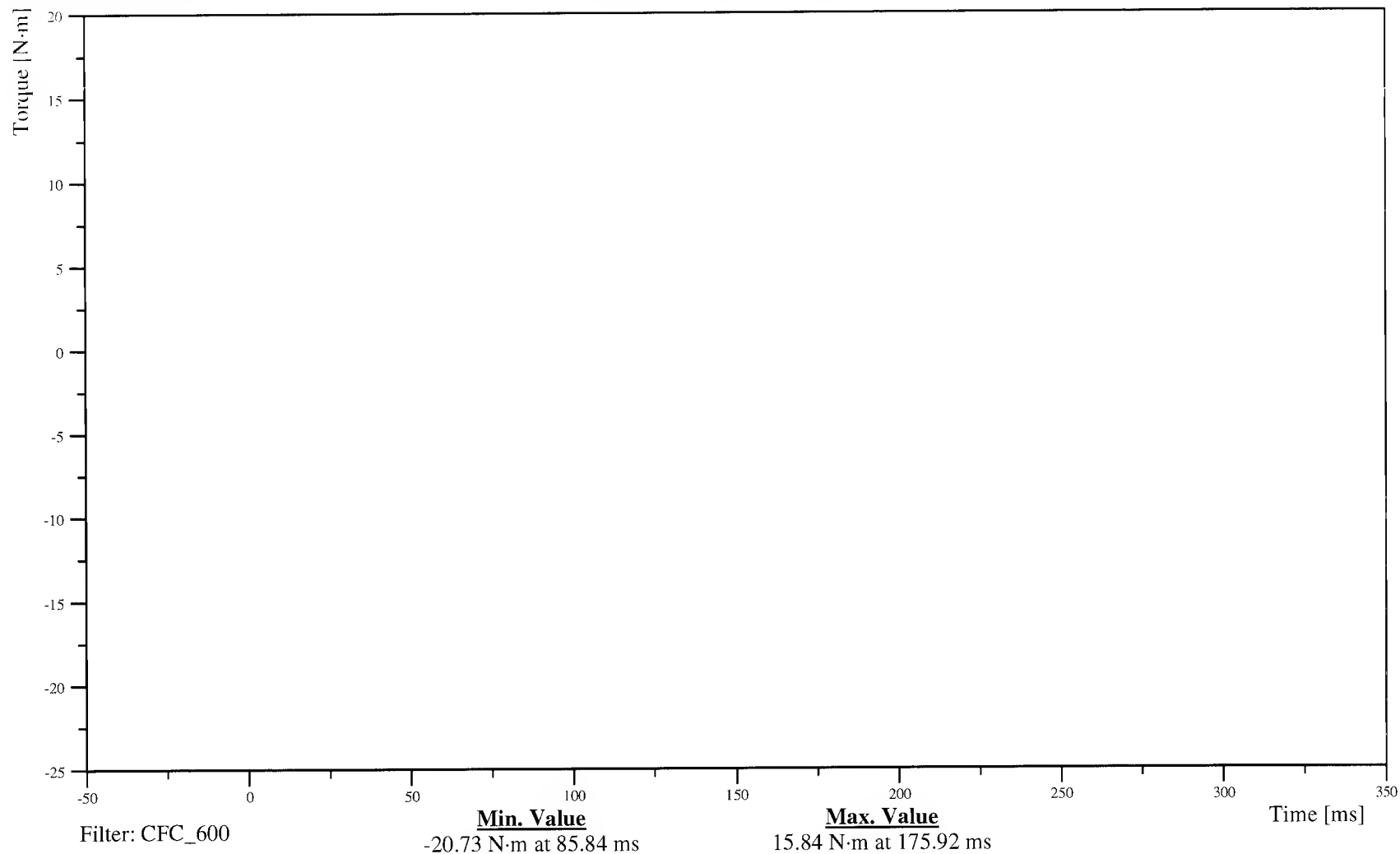
Customer: NHTSA

Test Number: C60106

14NECKUP00SHMOYB

TRC Inc. Test Lab: CTF

Test Number: 060320



B-42

060320

56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

Date: 03/20/2006

Time: 12:01

LEFT REAR PASSENGER NECK MOMENT ABOUT Z AXIS

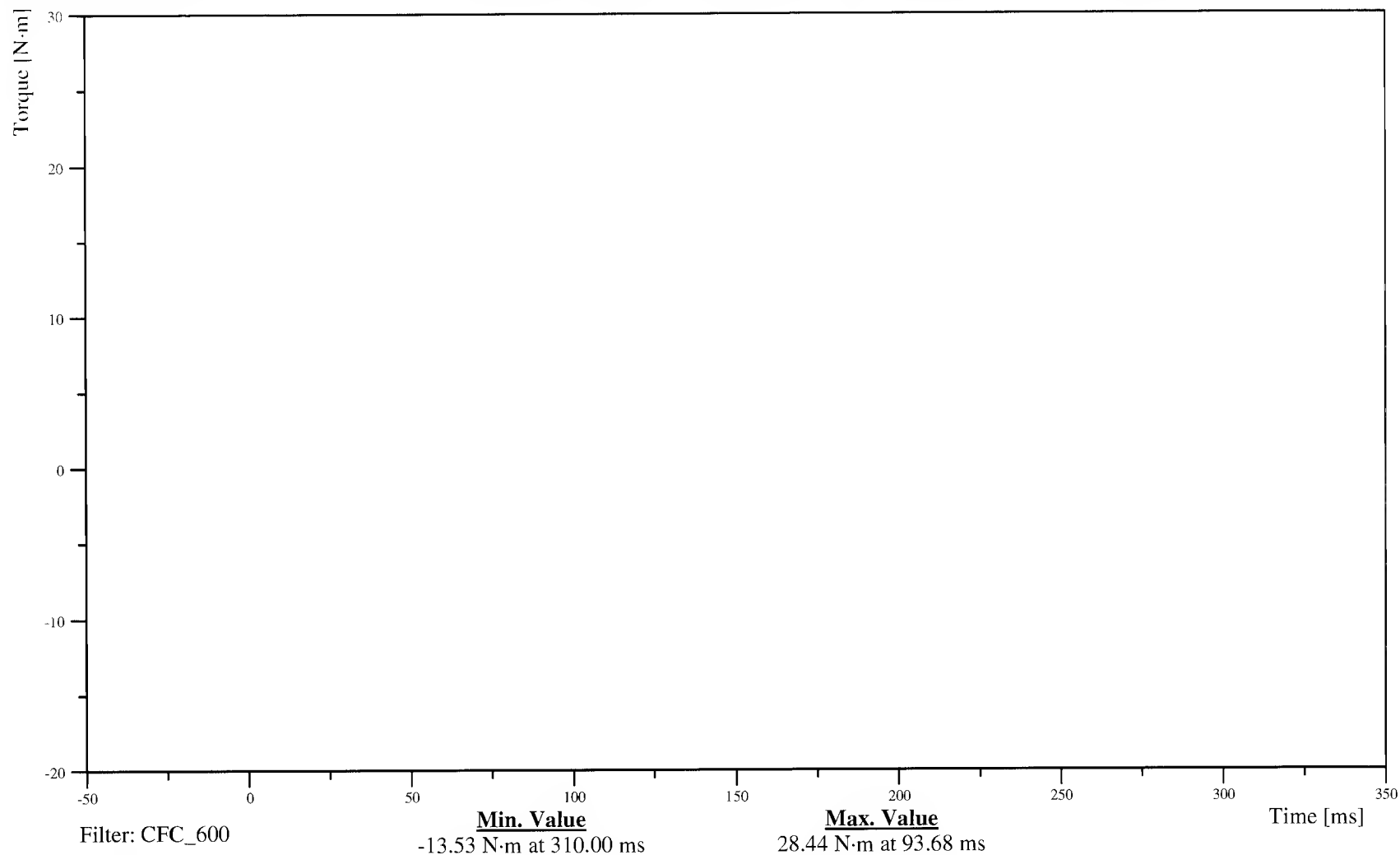
Customer: NHTSA

Test Number: C60106

14NECKUP00SHMOZB

TRC Inc. Test Lab: CTF

Test Number: 060320



B-43

060320

# 56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

## Neck Moment about the Occipital Condyle (NECK OM)

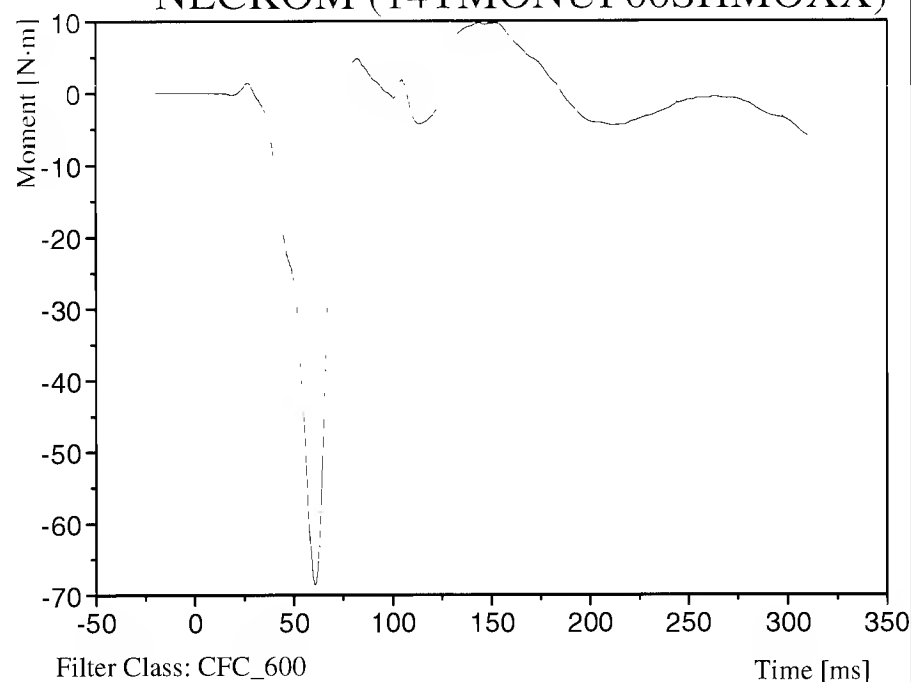
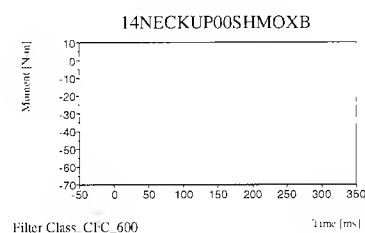
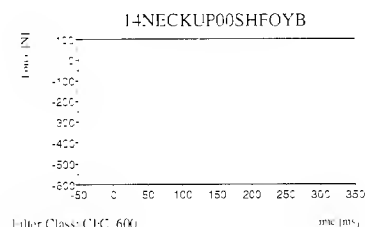
Date: 03/20/2006  
Time: 12:01

Customer: NHTSA  
Test Number: C60106

Test Orientation = Side

TRC Inc. Test Lab: CTF  
Test Number: 060320

NECKOM (14TMONUP00SHMOXX)



Dummy: HIII/SID  
Seating Position:  
Left Rear Passenger

Neck OM Source Code:  $M_x + (D^2 F_y)$

[Max.] 9.77 N·m at 143.52 ms

[Min.] -68.60 N·m at 60.64 ms

B-44

060320

56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

Date: 03/20/2006

Time: 12:01

LEFT REAR PASSENGER UPPER RIB Y-AXIS ACCELERATION

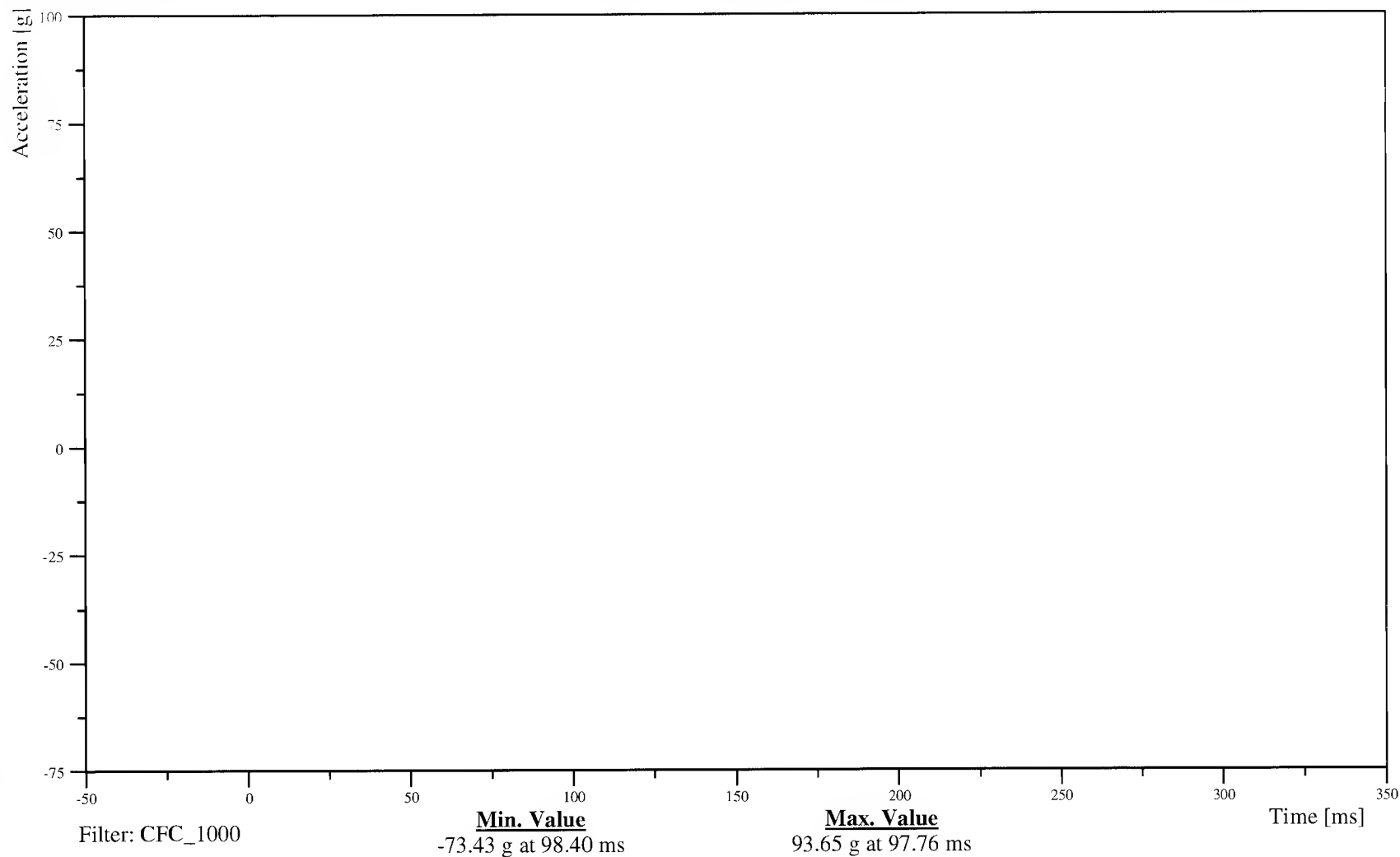
Customer: NHTSA

Test Number: C60106

14RIBSLU00SHACYA

TRC Inc. Test Lab: CTF

Test Number: 060320



B-45

060320



56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

LEFT REAR PASSENGER UPPER RIB Y-AXIS VELOCITY

Date: 03/20/2006

Time: 12:01

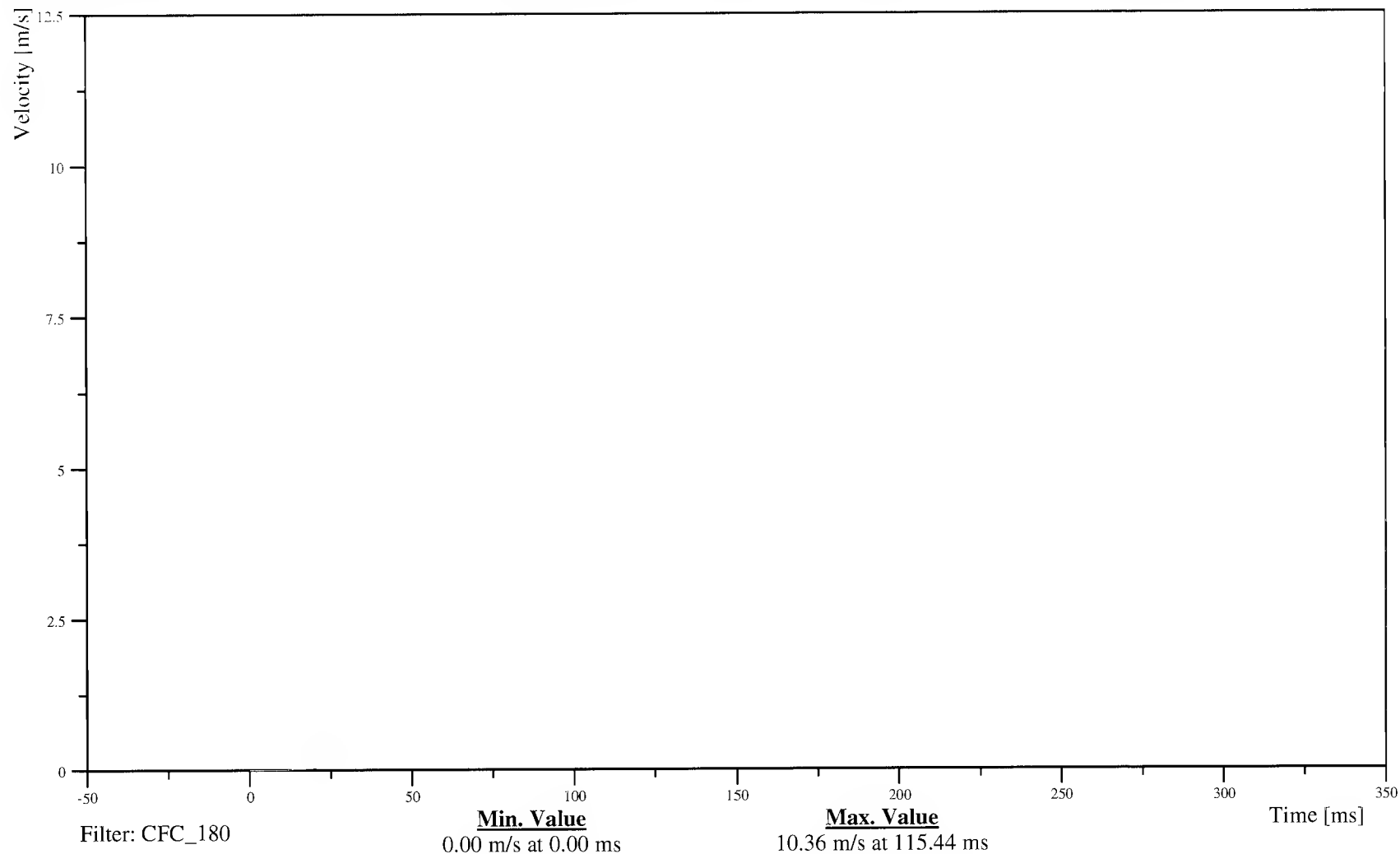
Customer: NHTSA

Test Number: C60106

14RIBSLU00SHVEYC

TRC Inc. Test Lab: CTF

Test Number: 060320



B-46

060320

56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

Date: 03/20/2016

Time: 12:01

LEFT REAR PASSENGER LOWER RIB Y-AXIS ACCELERATION

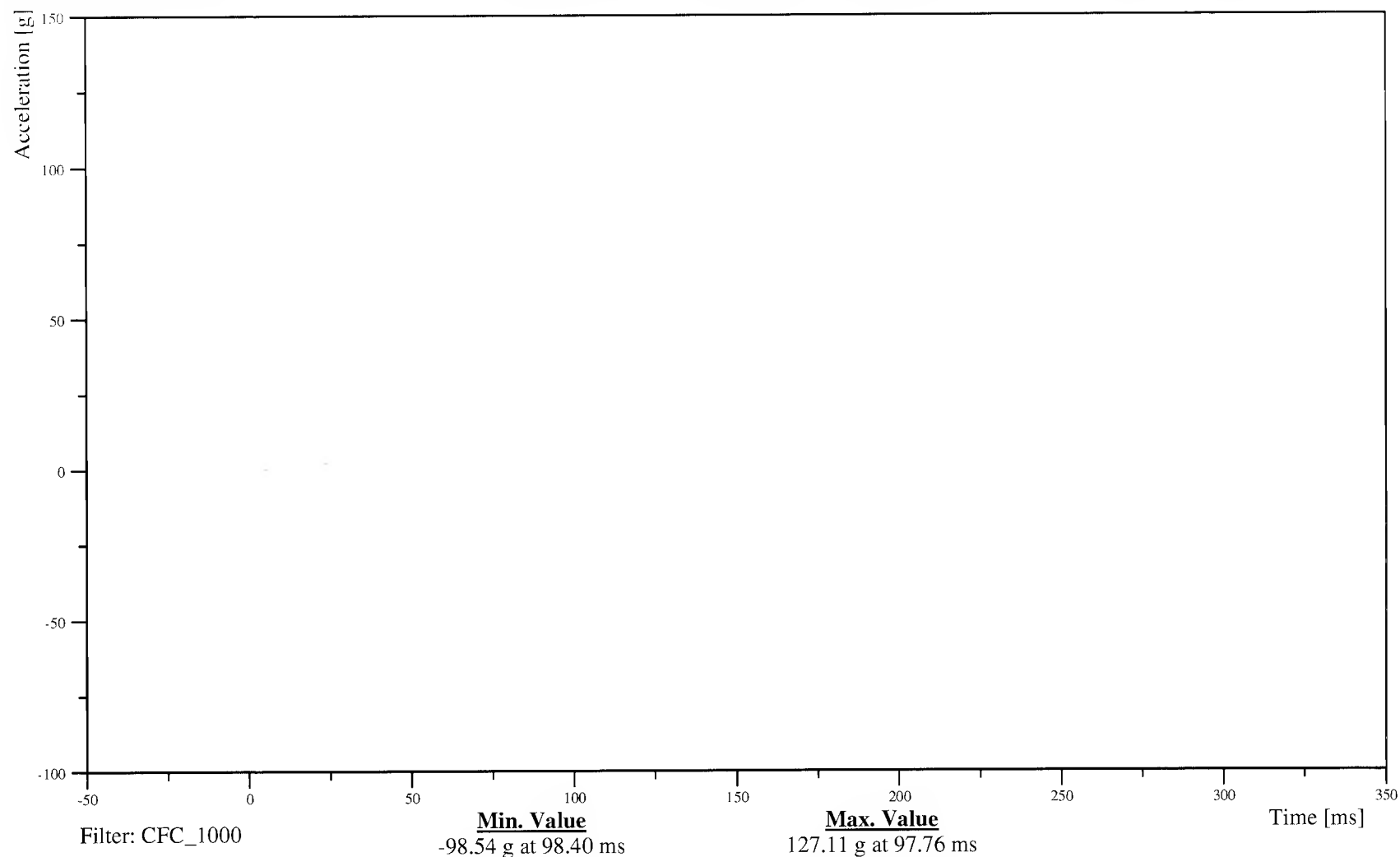
Customer: NHTSA

Test Number: C60106

14RIBSLL00SHACYA

TRC Inc. Test Lab: CTF

Test Number: 060320



B-47

060320

56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

Date: 03/20/2006

LEFT REAR PASSENGER LOWER RIB Y-AXIS VELOCITY

Time: 12.01

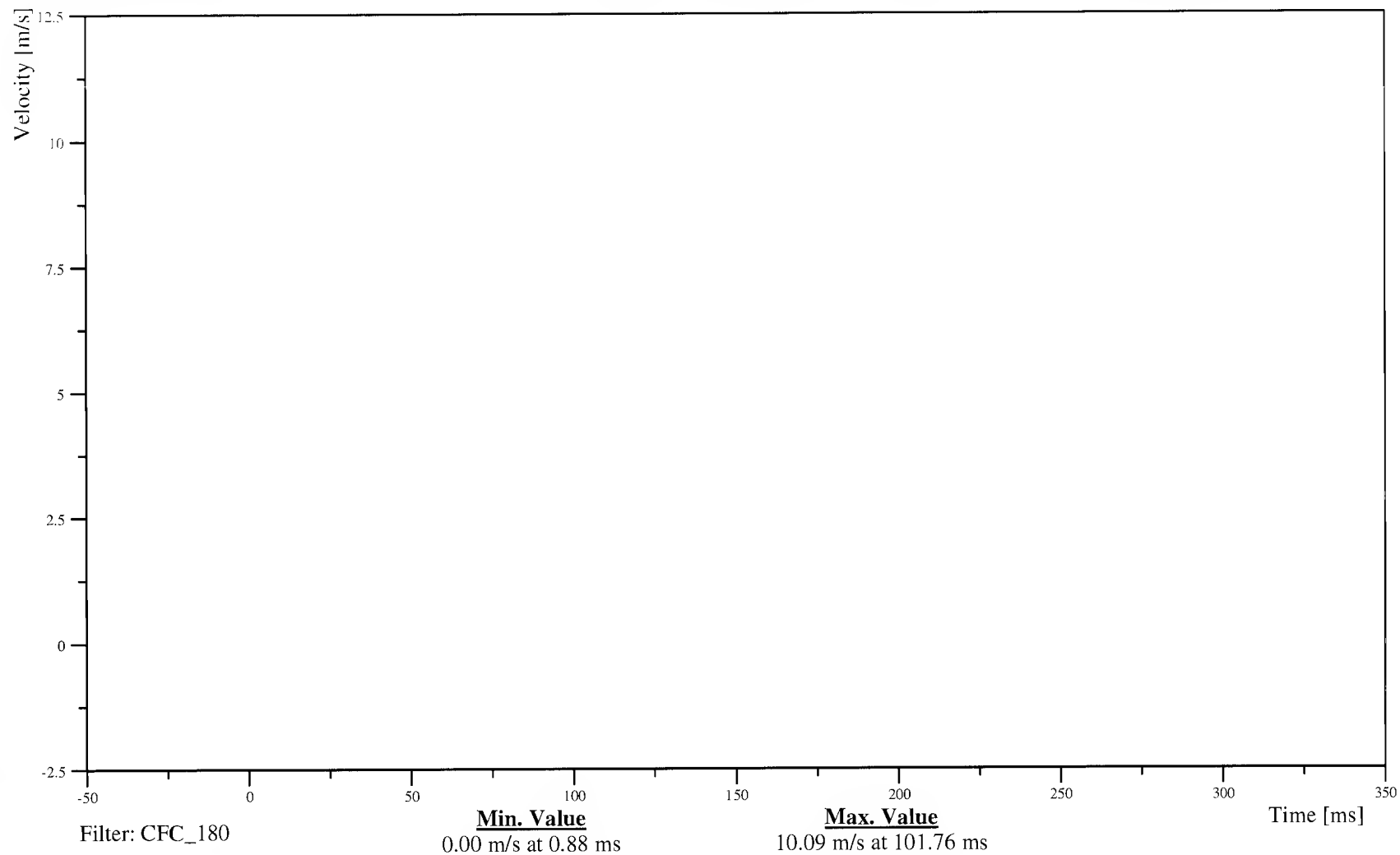
Customer: NHTSA

Test Number: C60106

14RIBSLL00SHVEYC

TRC Inc. Test Lab: CTF

Test Number: 060320



B-48

060320

56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

Date: 03/20/2006

Time: 12:01

LEFT REAR PASSENGER LOWER SPINE Y-AXIS ACCELERATION

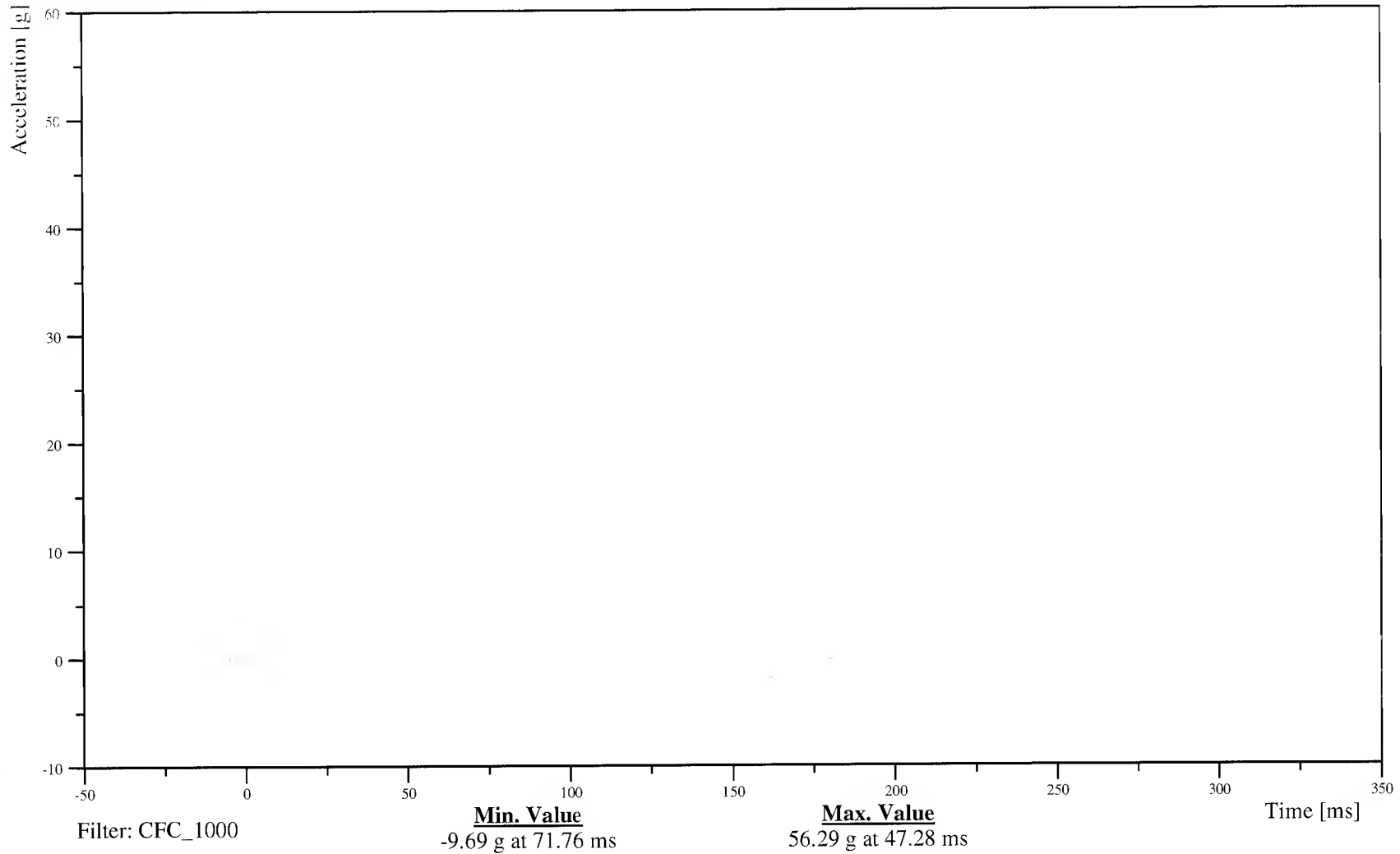
Customer: NHTSA

Test Number: C60106

14SPIN1200SHACYA

TRC Inc. Test Lab: CTF

Test Number: 060320



B-49

060320



56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

Date: 03/20/2006

Time: 12.01

LEFT REAR PASSENGER LOWER SPINE Y-AXIS VELOCITY

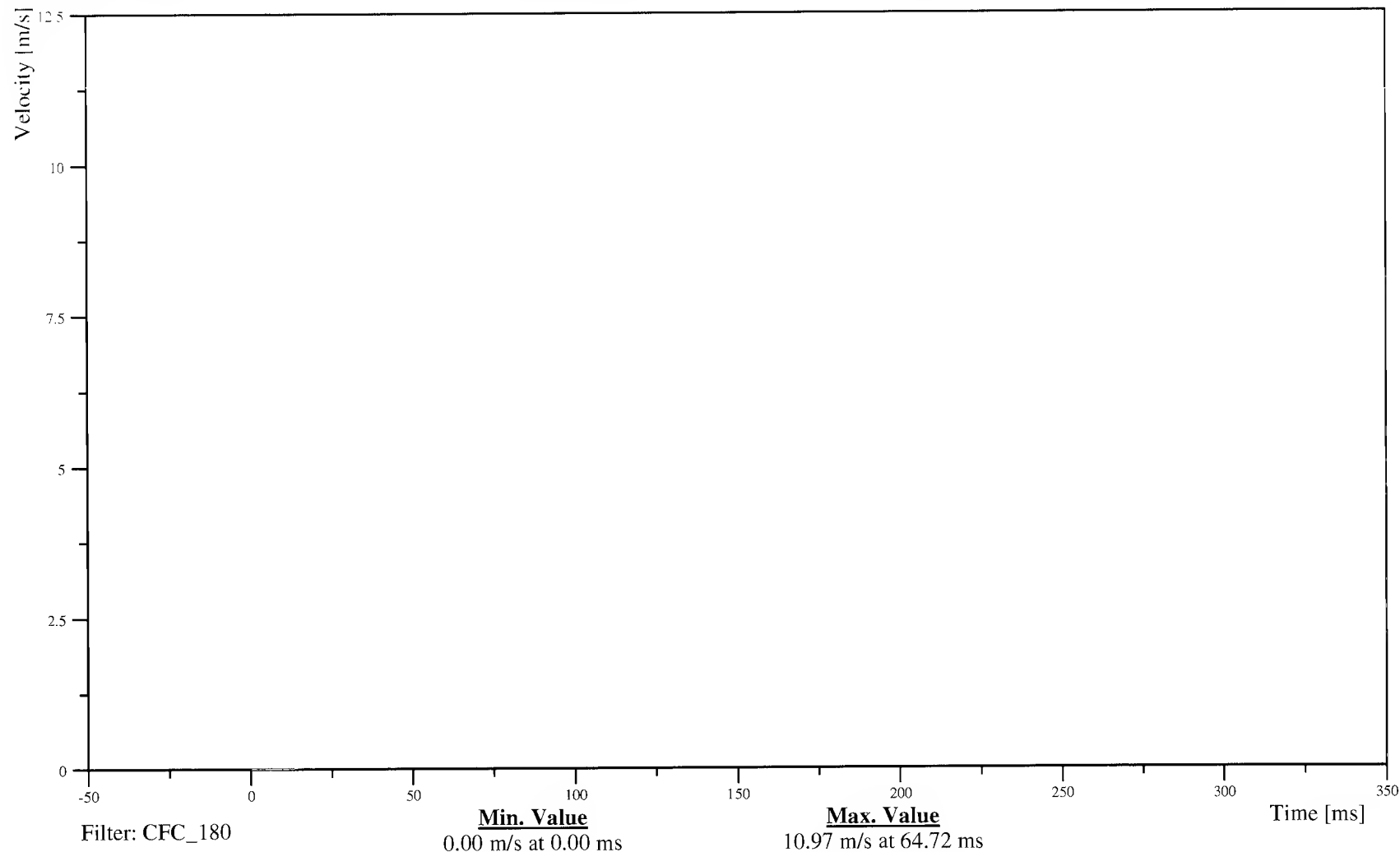
Customer: NHTSA

Test Number: C60106

14SPIN1200SHVEYC

TRC Inc. Test Lab: CTF

Test Number: 060320



B-50

060320

Driver and Left Rear Passenger Dummy Instrumentation Plots

Acceleration Data - Filter Class 1000 - Redundant

Integration Data - Filter Class 180 - Redundant

56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

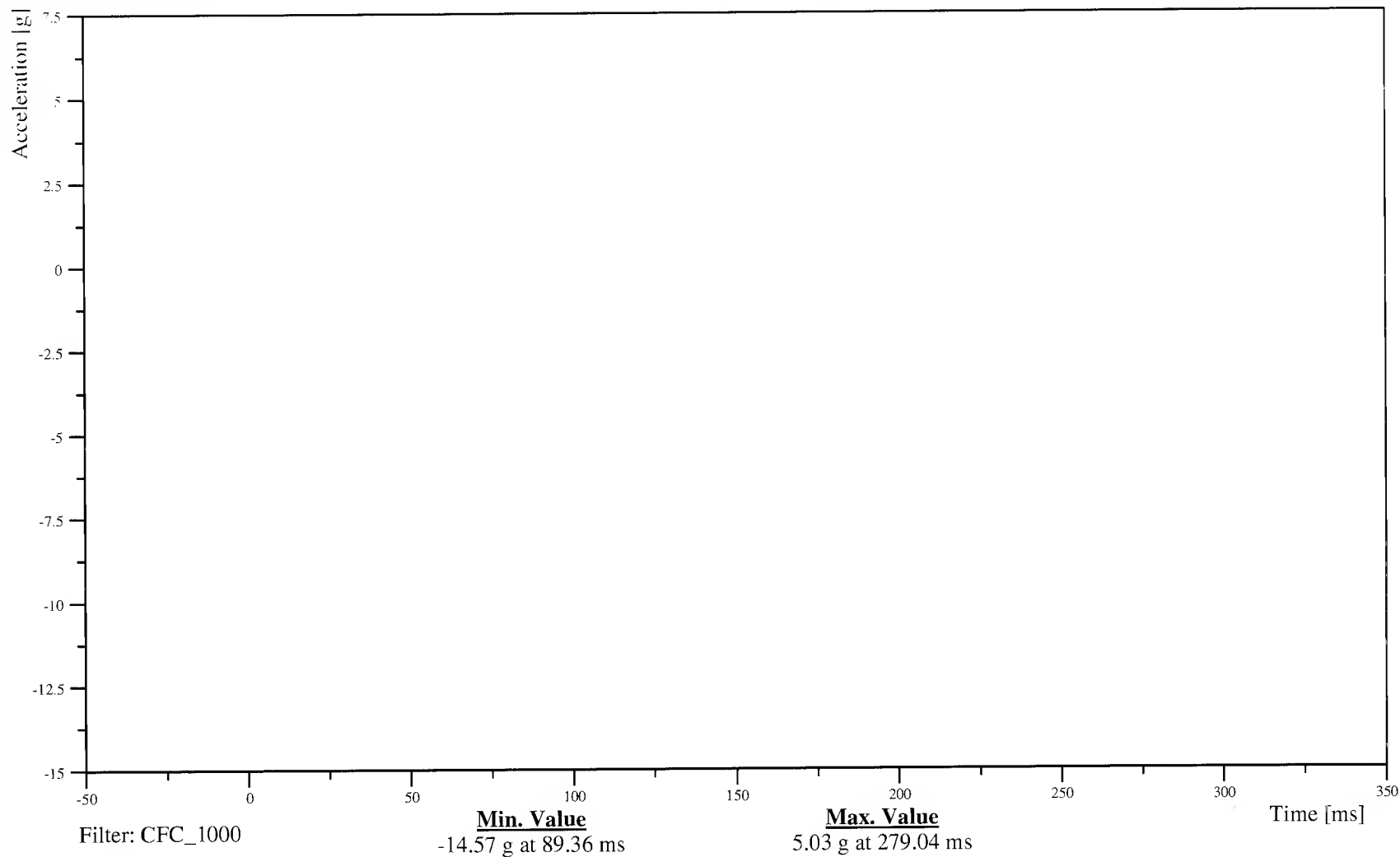
Date: 03/20/2006  
Time: 12:01

DRIVER HEAD X-AXIS REDUNDANT ACCELERATION

Customer: NHTSA  
Test Number: C60106

11HEADCGRDSHACXA

TRC Inc. Test Lab: CTF  
Test Number: 060320



B-54

060320

56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

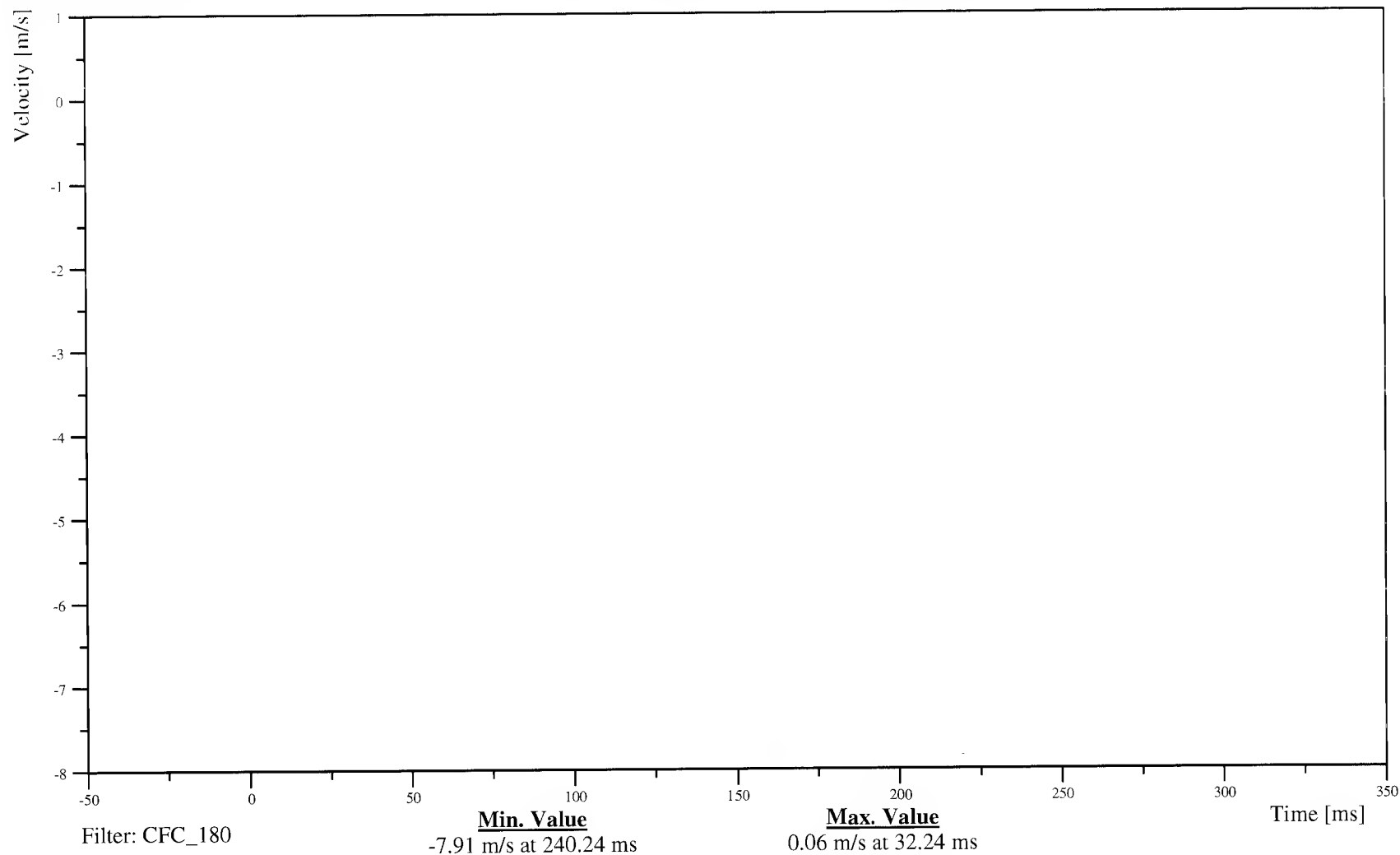
Date: 03/20/2006  
Time: 12:01

DRIVER HEAD X-AXIS REDUNDANT VELOCITY

Customer: NHTSA  
Test Number: C60106

11HEADCGRDSHVEXC

TRC Inc. Test Lab: CTF  
Test Number: 060320



B-55

060320



56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

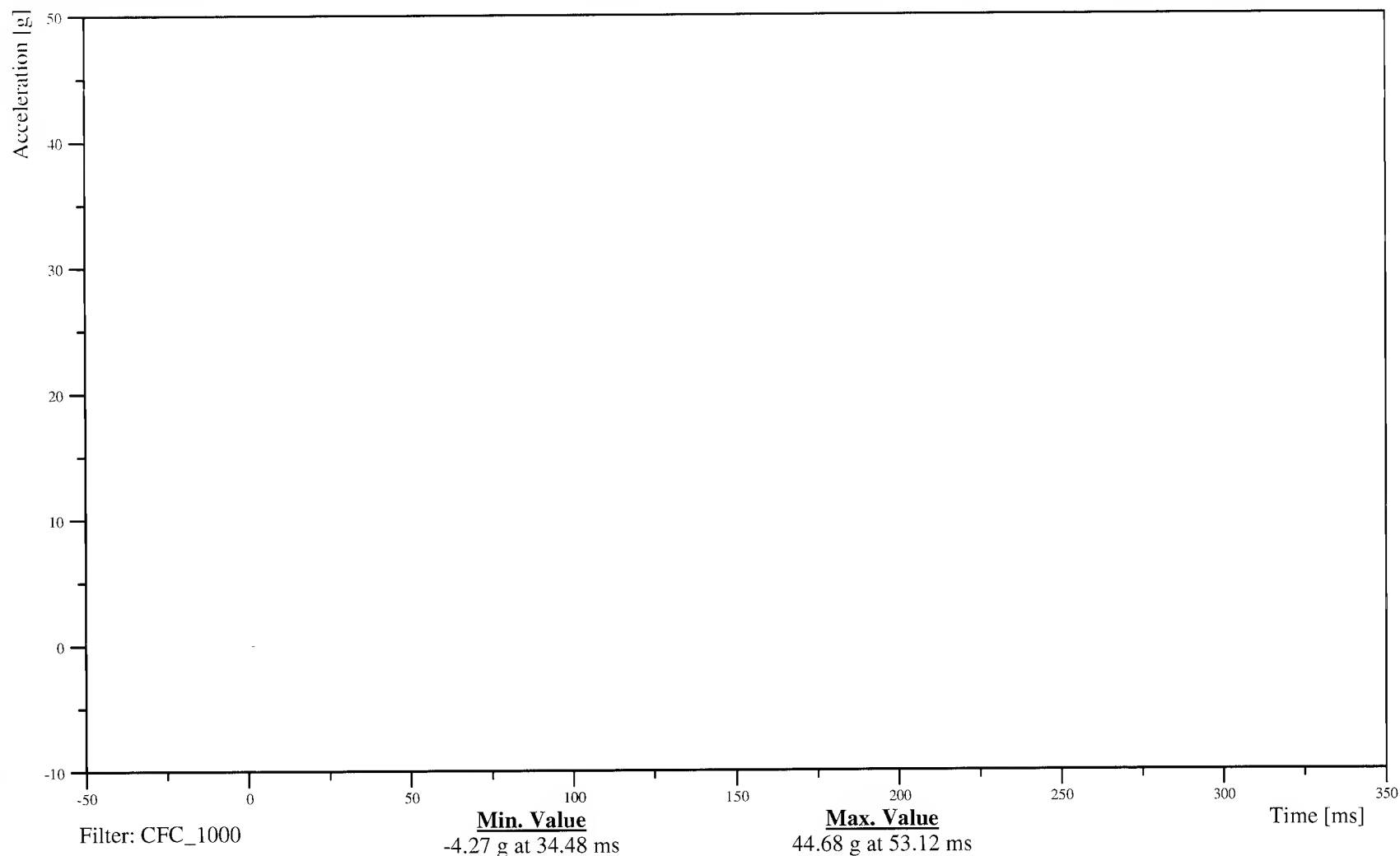
Date: 03/20/2006  
Time: 12:01

DRIVER HEAD Y-AXIS REDUNDANT ACCELERATION

Customer: NHTSA  
Test Number: C60106

11HEADCGRDSHACYA

TRC Inc. Test Lab: CTF  
Test Number: 060320



B-56

060320

56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

Date: 03/20/2006

Time: 12:01

DRIVER HEAD Y-AXIS REDUNDANT VELOCITY

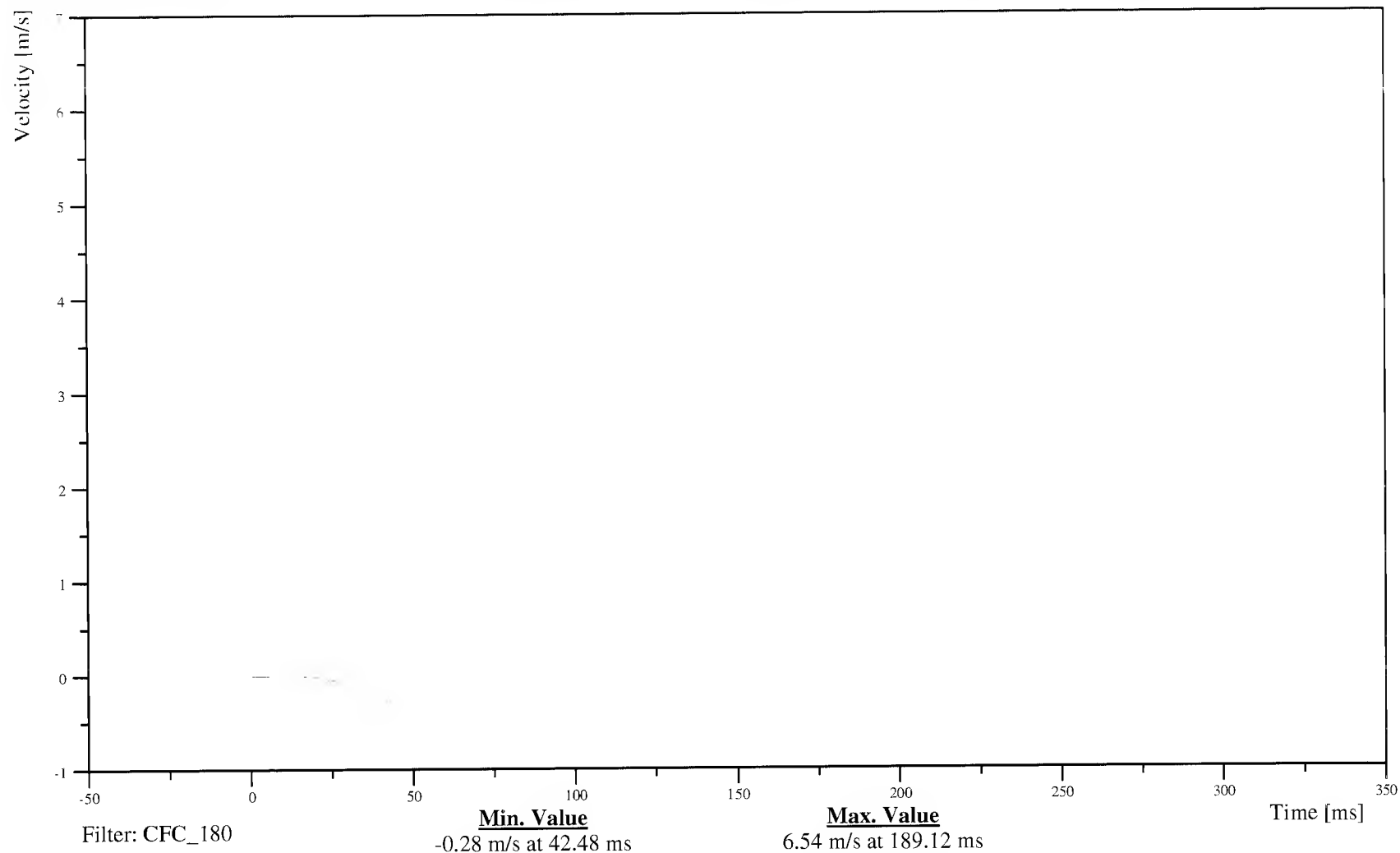
Customer: NHTSA

Test Number: C60106

11HEADCGRDSHVEYC

TRC Inc. Test Lab: CTF

Test Number: 060320



B-57

060320

56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

Date: 03/20/2006

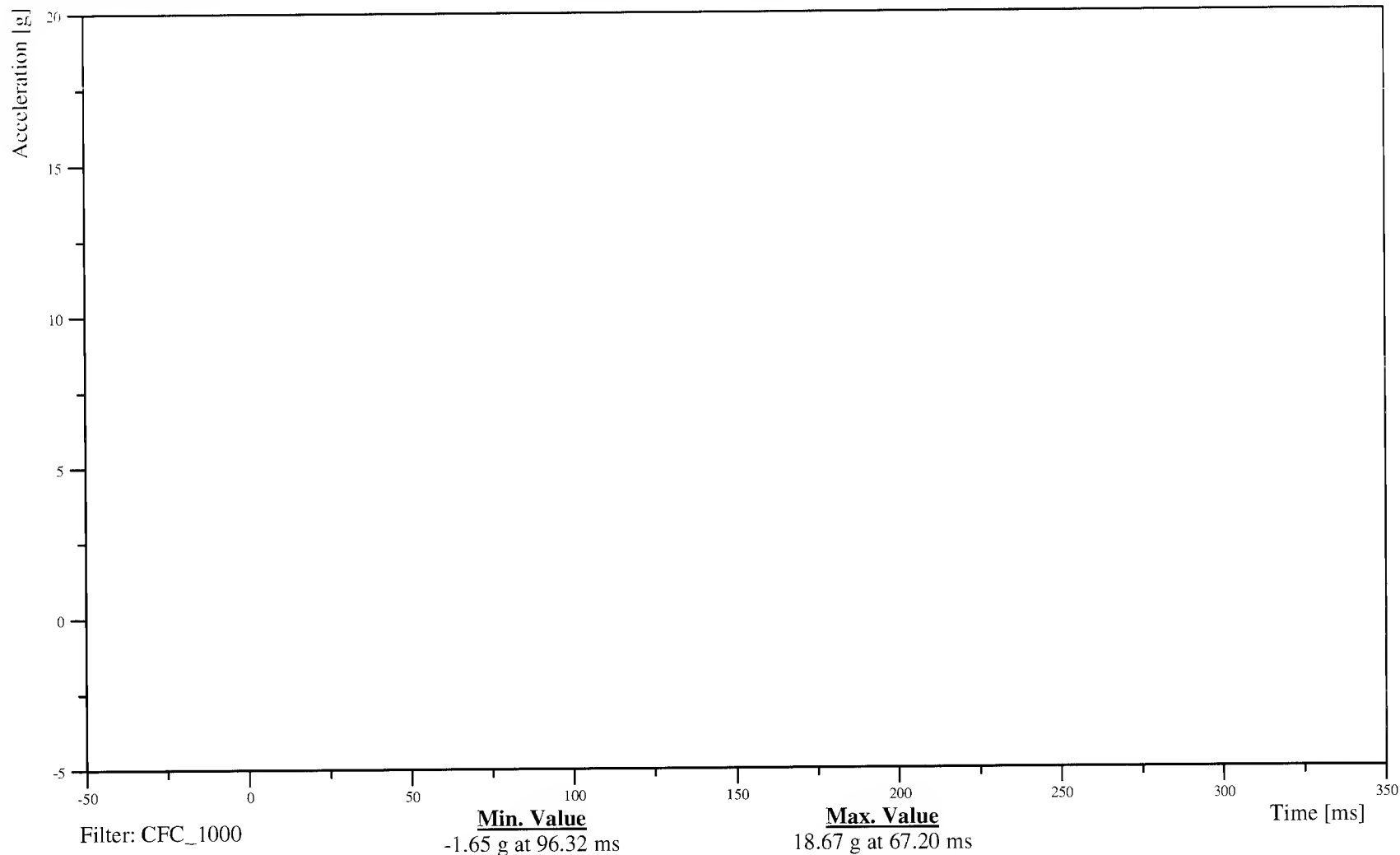
Time: 12:01

DRIVER HEAD Z-AXIS REDUNDANT ACCELERATION

Customer: NHTSA  
Test Number: C60106

11HEADCGRDSHACZA

TRC Inc. Test Lab: CTF  
Test Number: 060320



B-58

060320

56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

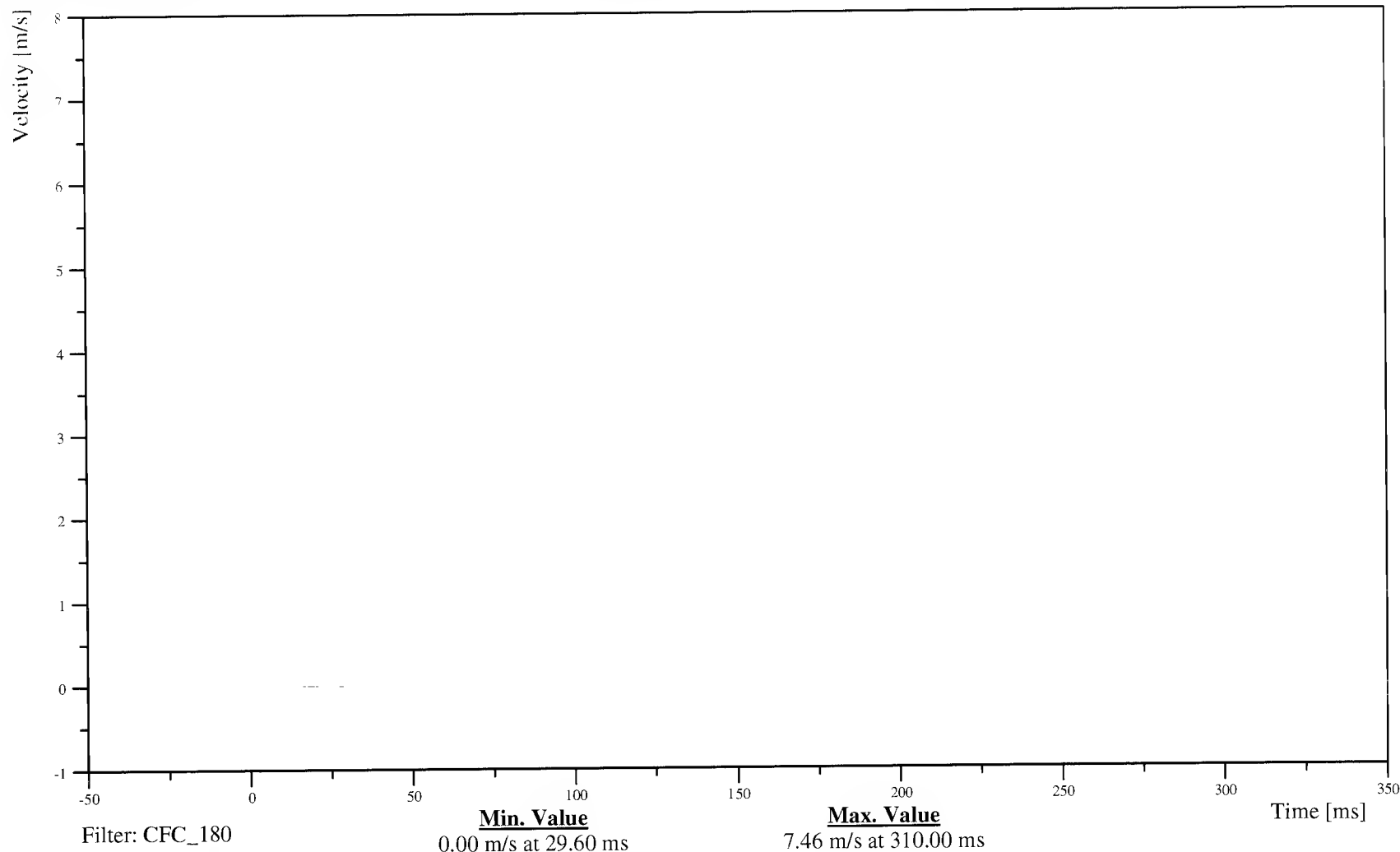
Date: 03/20/2006  
Time: 12:01

DRIVER HEAD Z-AXIS REDUNDANT VELOCITY

Customer: NHTSA  
Test Number: C60106

11HEADCGRDSHVEZC

TRC Inc. Test Lab: CTF  
Test Number: 060320



B-59

060320



56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

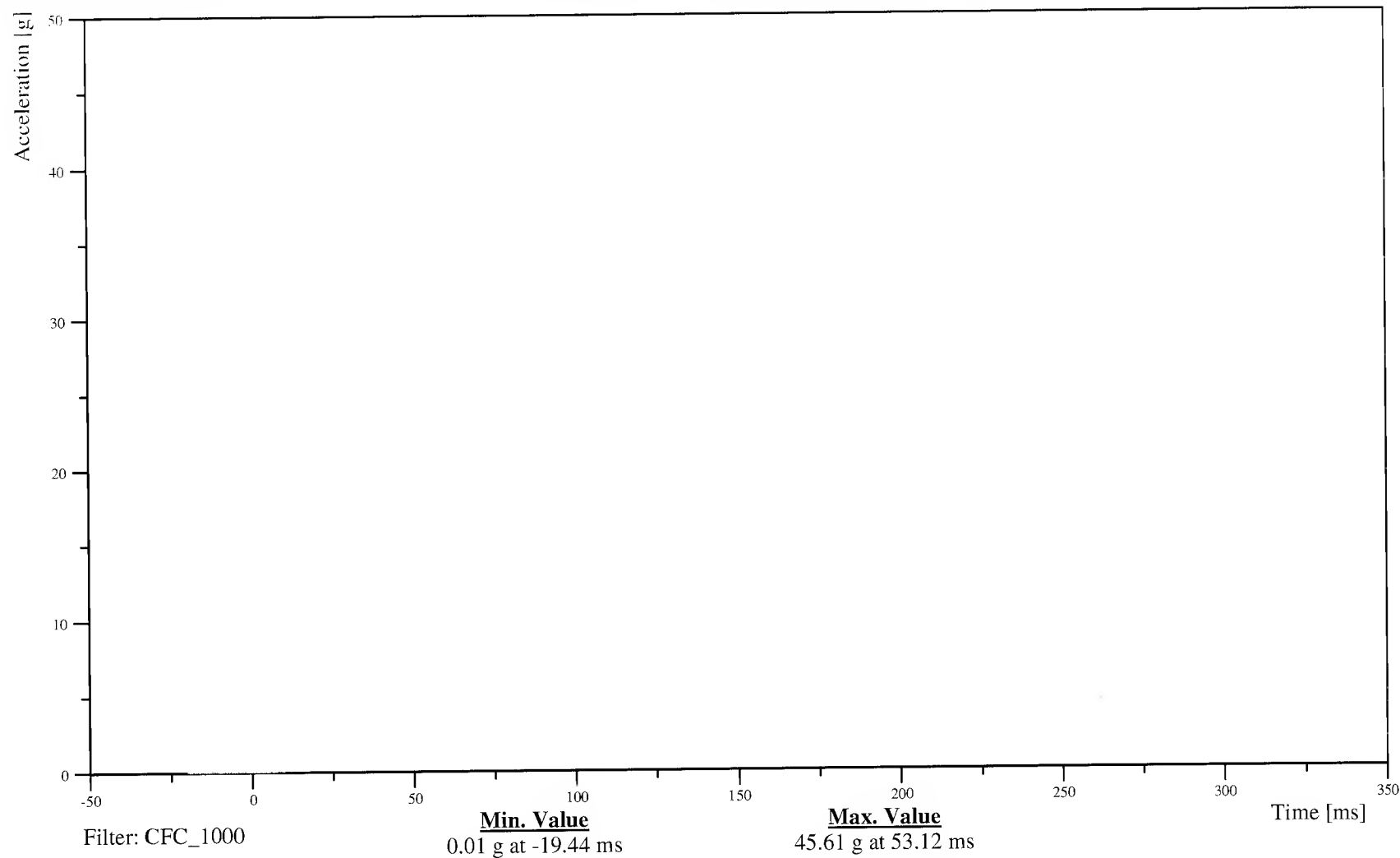
Date: 03/20/2006  
Time: 12:01

DRIVER HEAD RESULTANT REDUNDANT ACCELERATION

Customer: NHTSA  
Test Number: C60106

11HEADCGRDSHACRA

TRC Inc. Test Lab: CTF  
Test Number: 060320



B-60

060320

56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

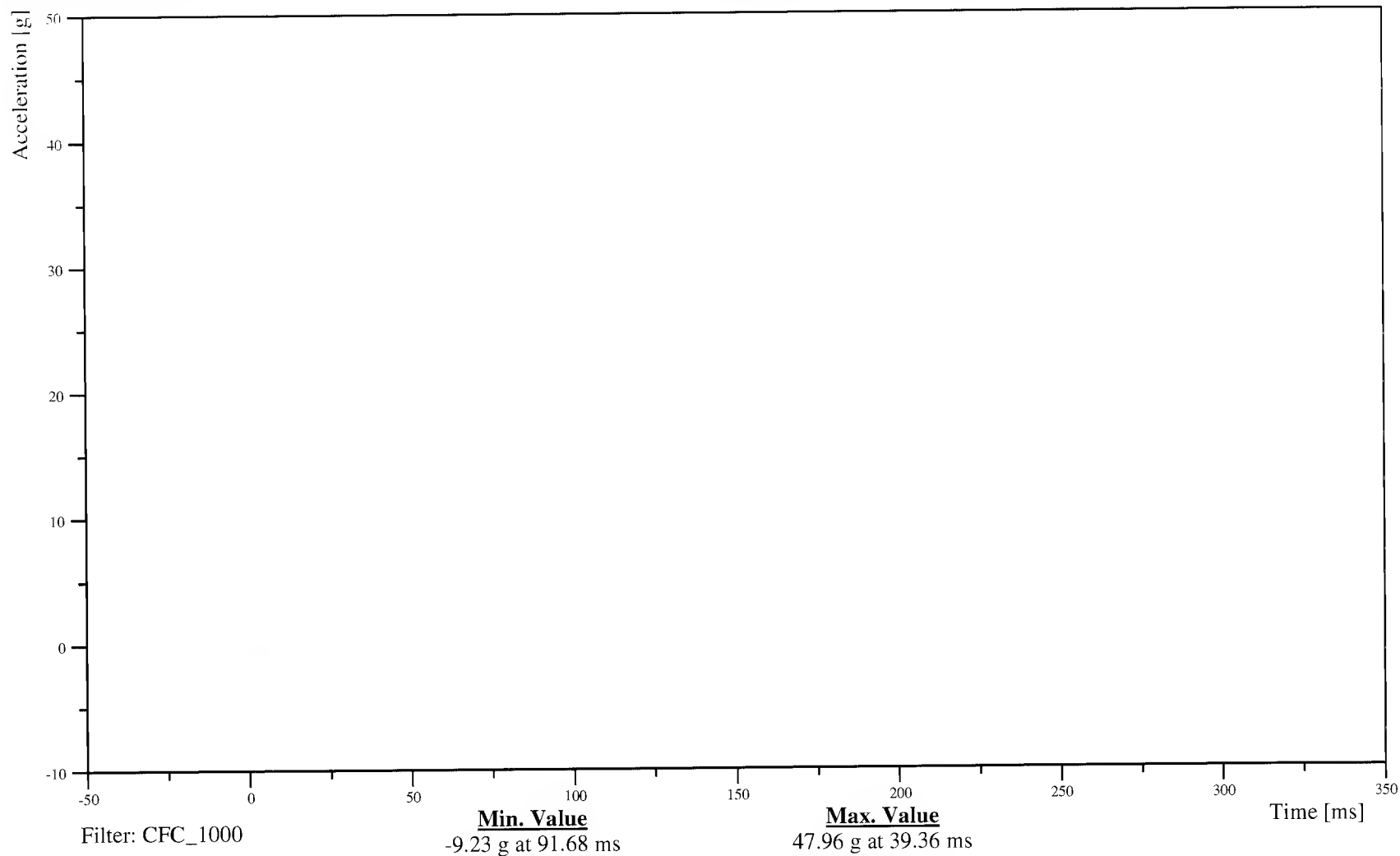
Date: 03/20/2006  
Time: 12:01

DRIVER UPPER RIB Y-AXIS REDUNDANT ACCELERATION

Customer: NHTSA  
Test Number: C60106

11RIBSLURESHACYA

TRC Inc. Test Lab: CTF  
Test Number: 060320



B-61

060320

56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

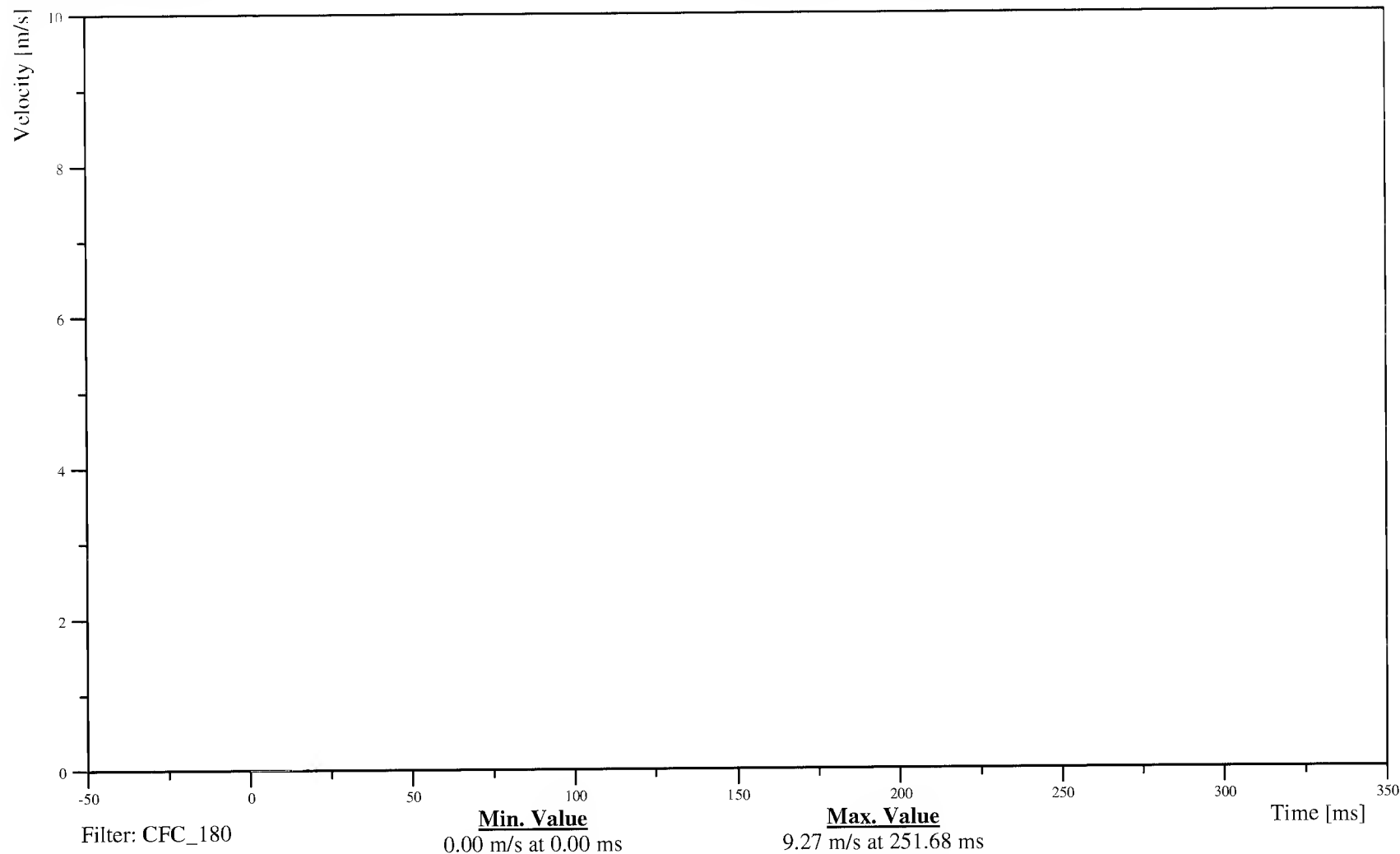
Date: 03/20/2006  
Time: 12:01

DRIVER UPPER RIB Y-AXIS REDUNDANT VELOCITY

Customer: NHTSA  
Test Number: C60106

11RIBSLURESHVEYC

TRC Inc. Test Lab: CTF  
Test Number: 060320



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060320

56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

Date: 03/20/2006

Time: 12:01

DRIVER LOWER RIB Y-AXIS REDUNDANT ACCELERATION

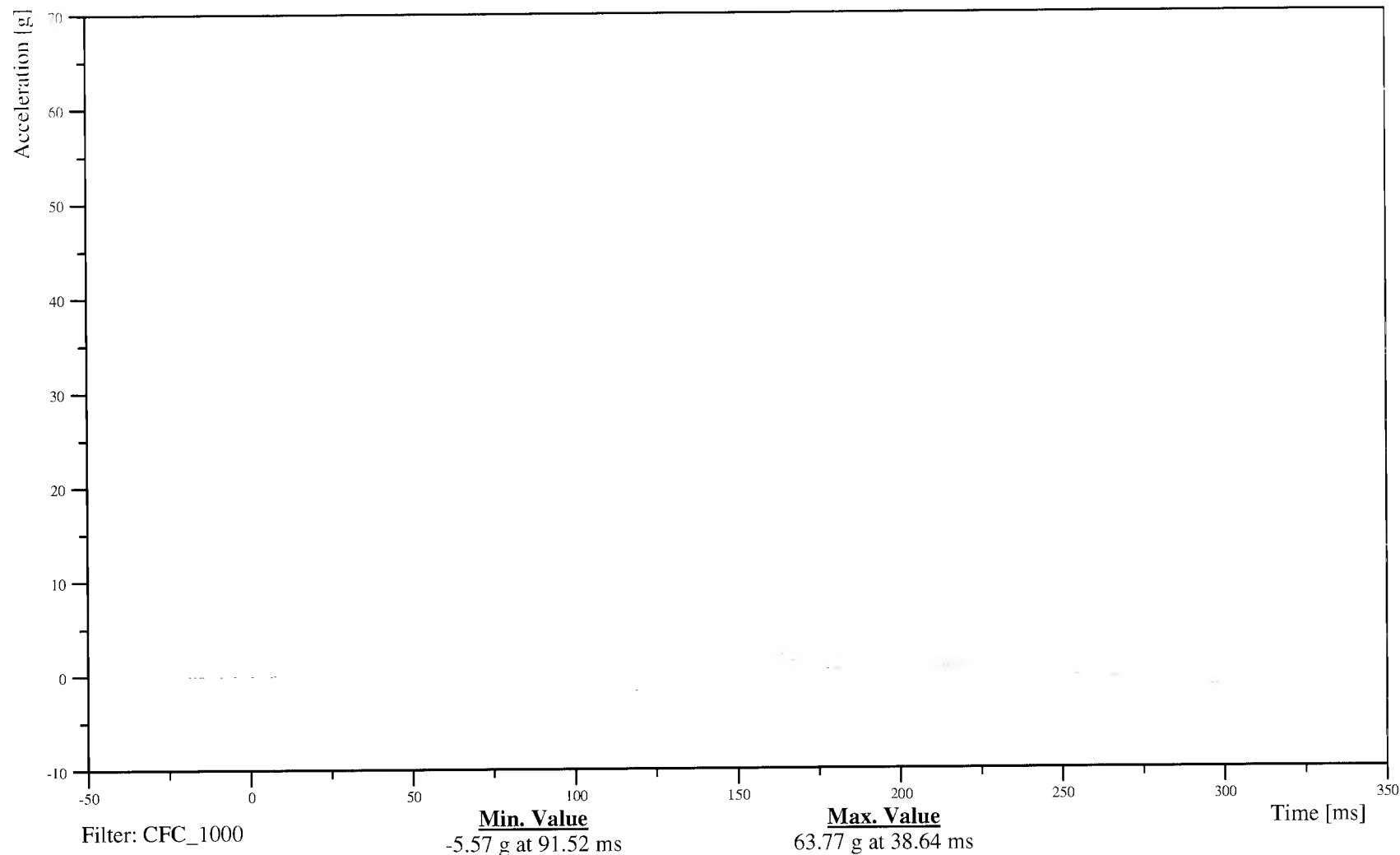
Customer: NHTSA

Test Number: C60106

11RIBSLLRESHACYA

TRC Inc. Test Lab: CTF

Test Number: 060320



B-63

060320



56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

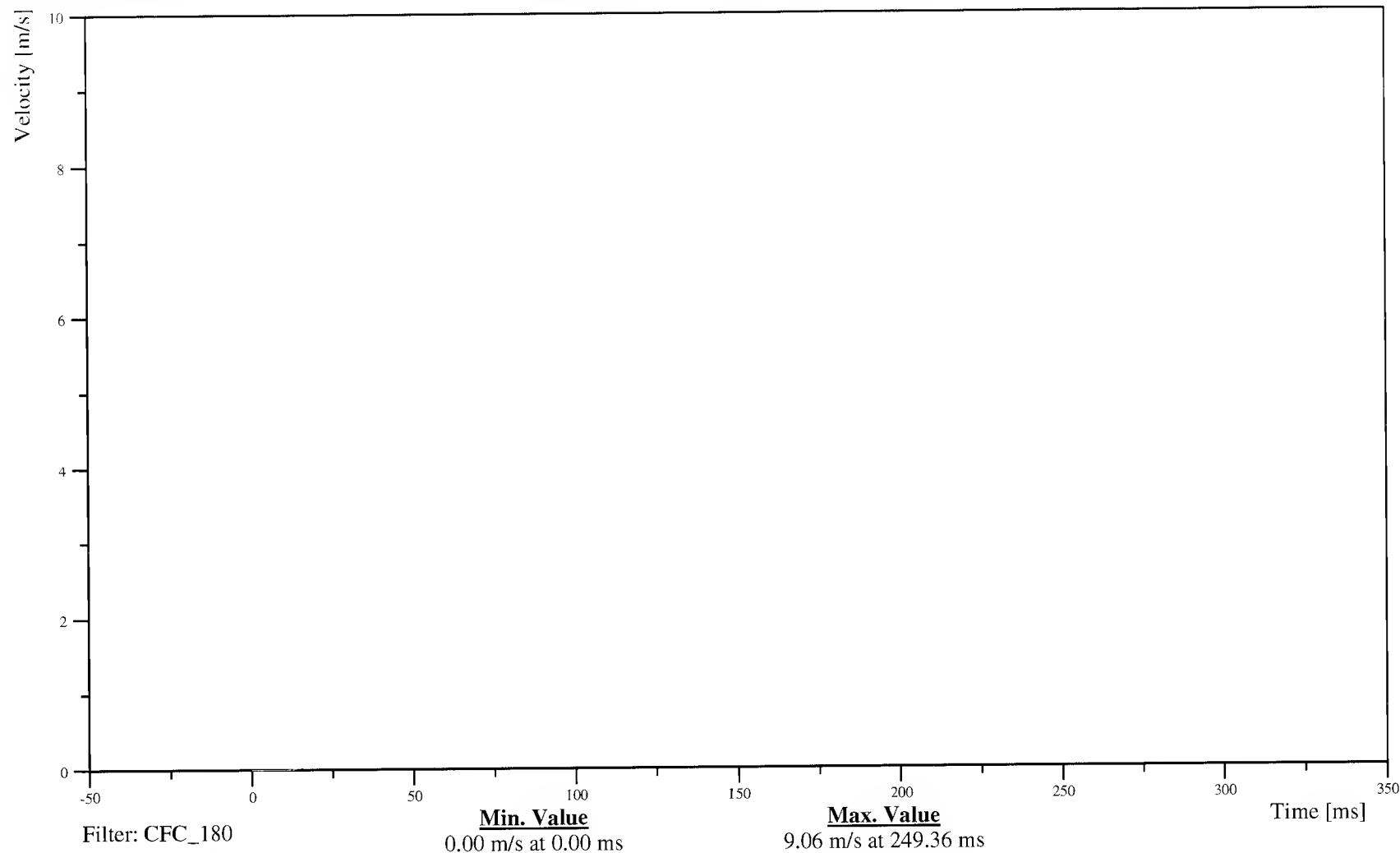
Date: 03/20/2006  
Time: 12:01

DRIVER LOWER RIB Y-AXIS REDUNDANT VELOCITY

Customer: NHTSA  
Test Number: C60106

11RIBSLLRESHVEYC

TRC Inc. Test Lab: CTF  
Test Number: 060320



B-64

060320

56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

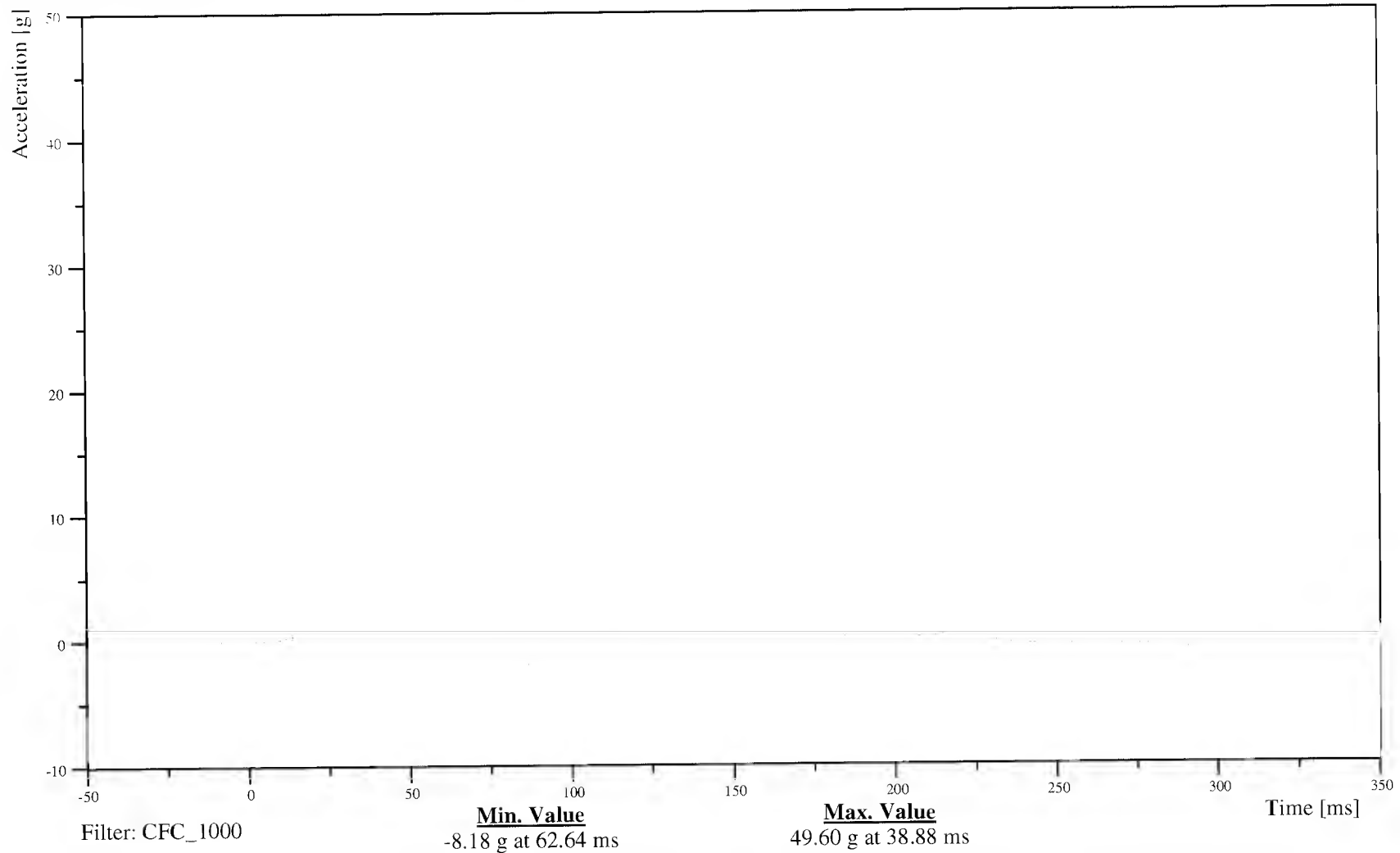
Date: 03/20/2006  
Time: 12:01

DRIVER LOWER SPINE Y-AXIS REDUNDANT ACCELERATION

Customer: NHTSA  
Test Number: C60106

11SPIN12RDSHACYA

TRC Inc. Test Lab: CTF  
Test Number: 060320



B-65

060320

56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

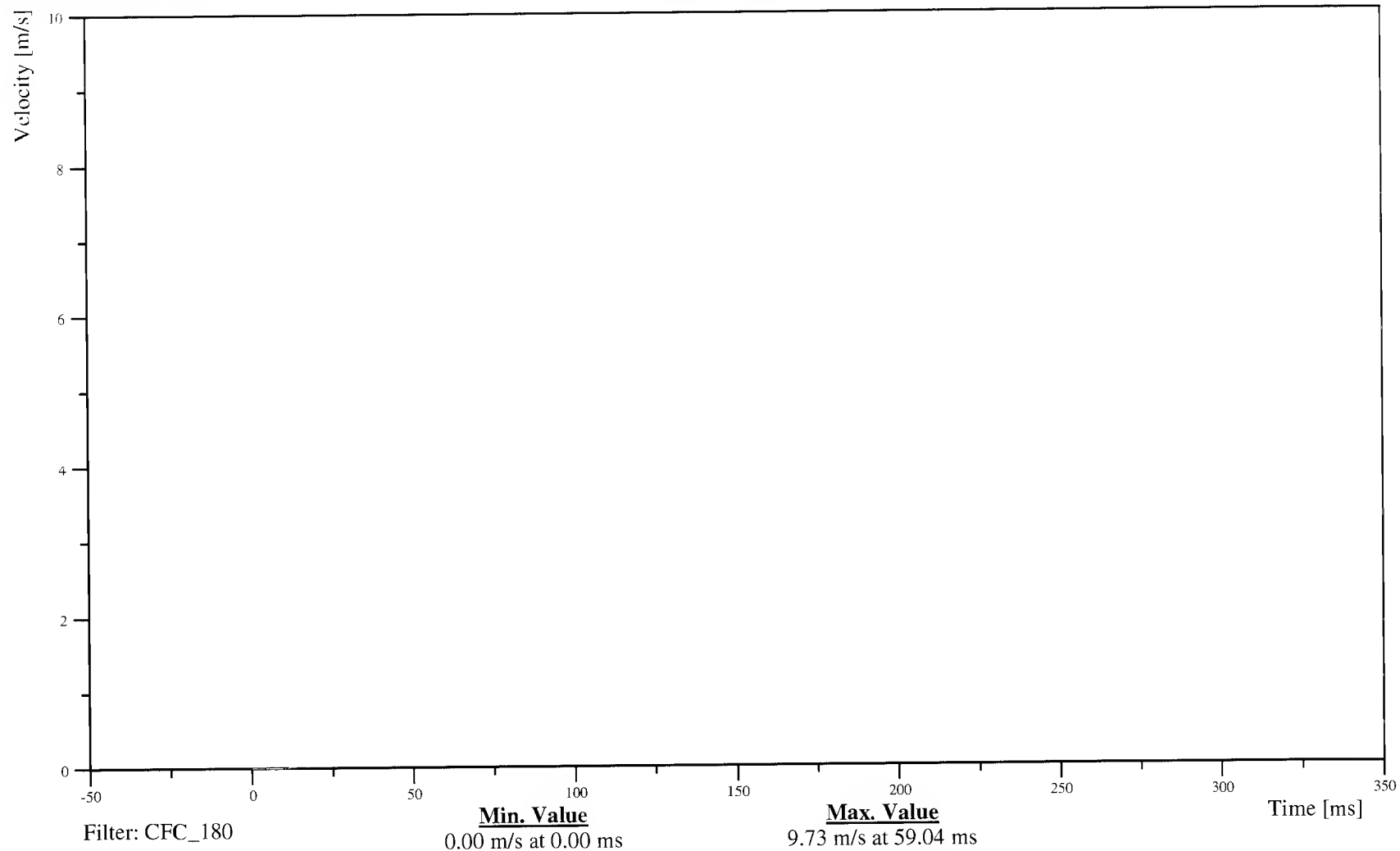
Date: 03/20/2006  
Time: 12:01

DRIVER LOWER SPINE Y-AXIS REDUNDANT VELOCITY

Customer: NHTSA  
Test Number: C60106

11SPIN12RDSHVEYC

TRC Inc. Test Lab: CTF  
Test Number: 060320



B-66

060320

56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

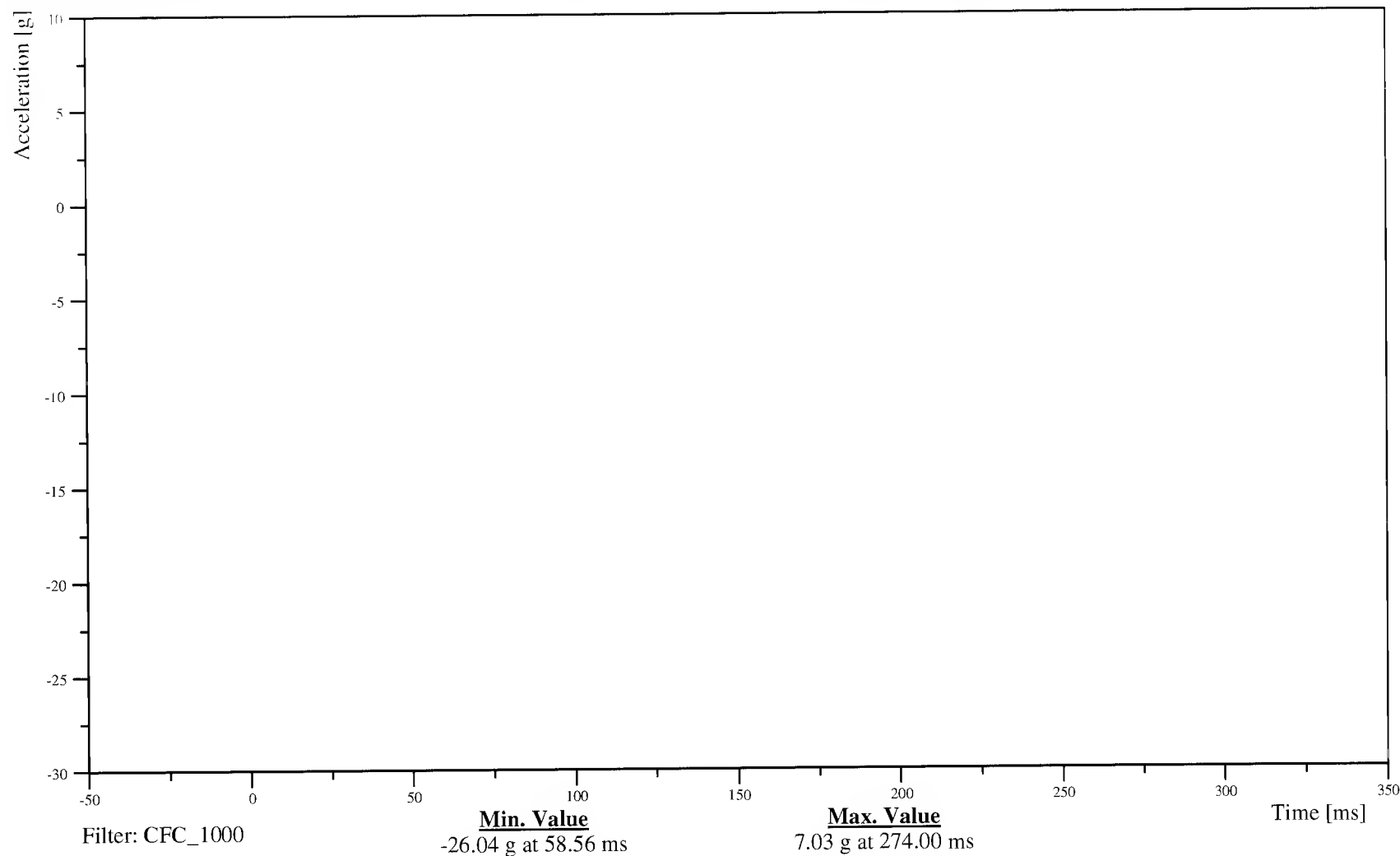
Date: 03/20/2006  
Time: 12:01

LEFT REAR PASSENGER HEAD X-AXIS REDUNDANT ACCELERATION

Customer: NHTSA  
Test Number: C60106

14HEADCGRDSHACXA

TRC Inc. Test Lab: CTF  
Test Number: 060320



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060320



56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

Date: 03/20/2006

Time: 12:01

LEFT REAR PASSENGER HEAD X-AXIS REDUNDANT VELOCITY

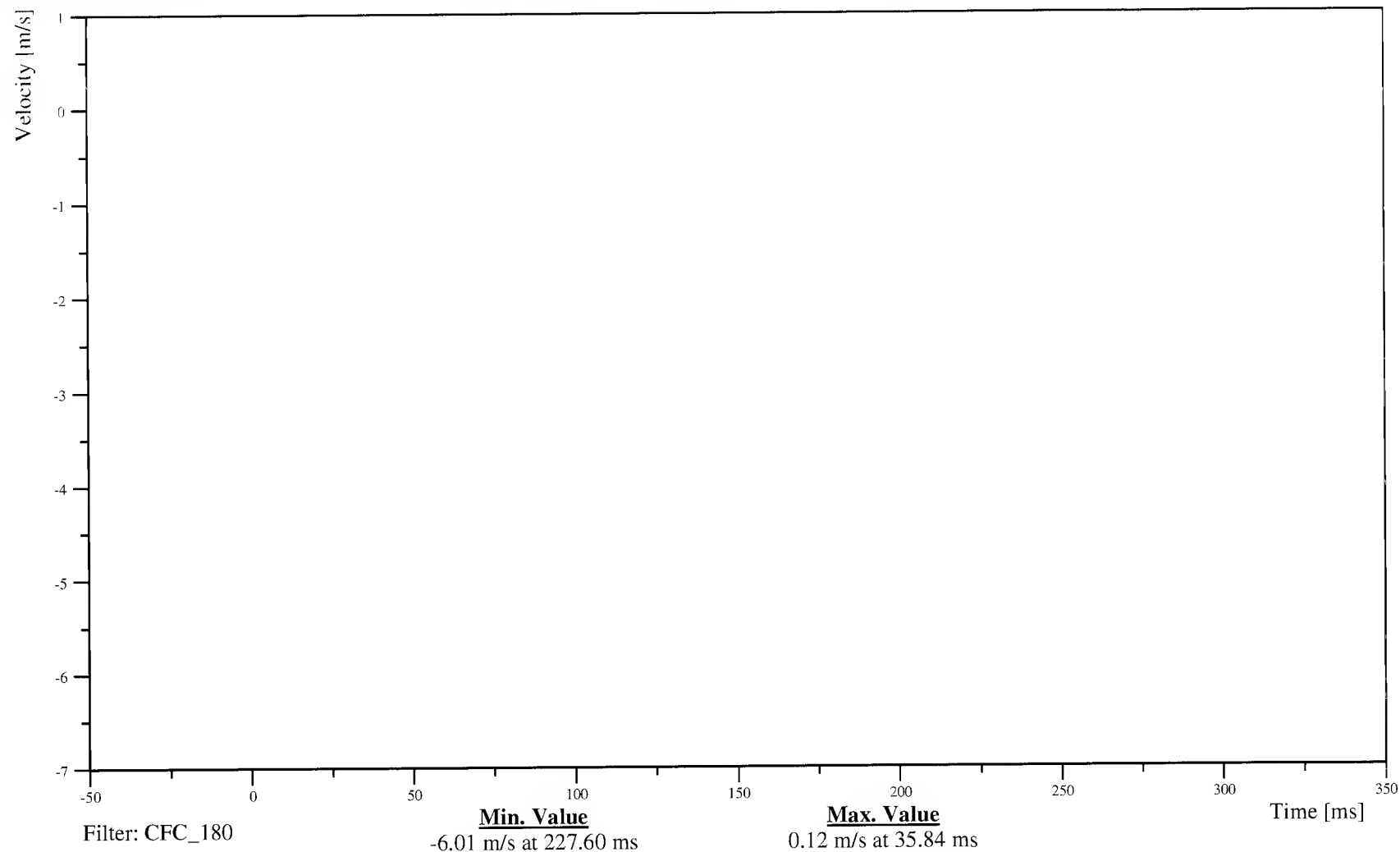
Customer: NHTSA

Test Number: C60106

14HEADCGRDSHVEXC

TRC Inc. Test Lab: CTF

Test Number: 060320



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060320

56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

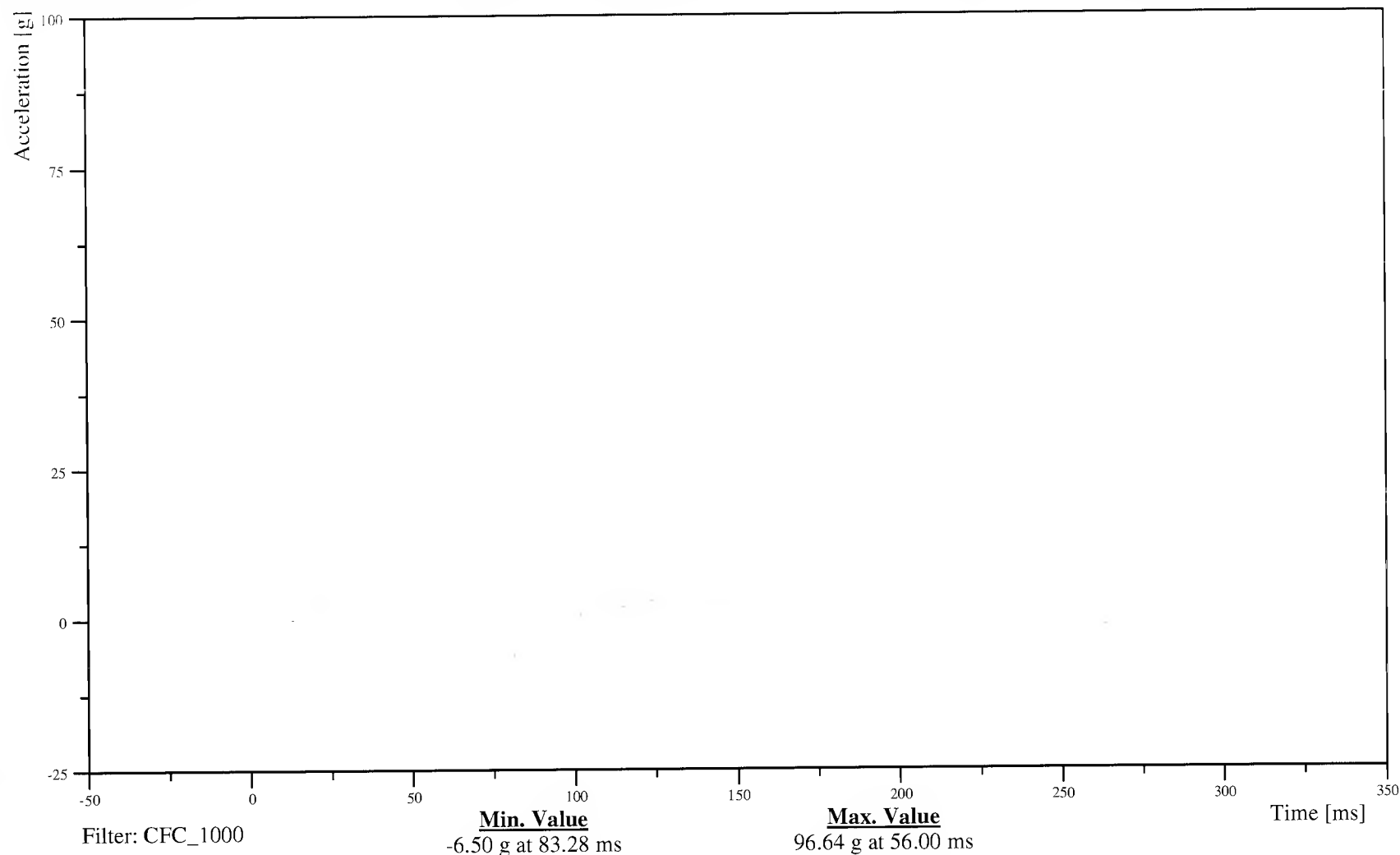
Date: 03/20/2006  
Time: 12:01

LEFT REAR PASSENGER HEAD Y-AXIS REDUNDANT ACCELERATION

Customer: NHTSA  
Test Number: C60106

14HEADCGRDSHACYA

TRC Inc. Test Lab: CTF  
Test Number: 060320



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060320

56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

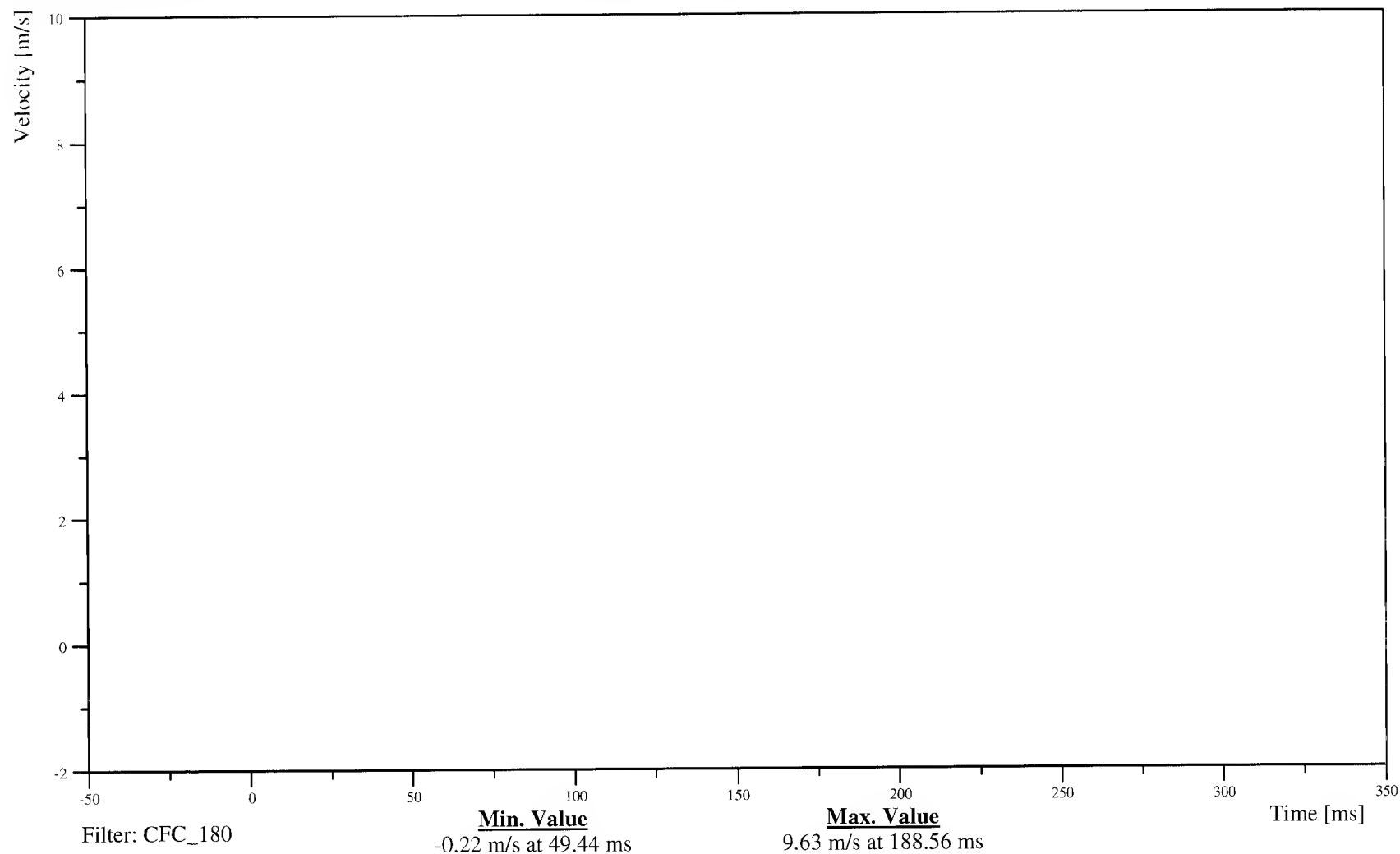
Date: 03/20/2006  
Time: 12:01

LEFT REAR PASSENGER HEAD Y-AXIS REDUNDANT VELOCITY

Customer: NHTSA  
Test Number: C60106

14HEADCGRDSHVEYC

TRC Inc. Test Lab: CTF  
Test Number: 060320



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060320

56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

Date: 03/20/2006

Time: 12:01

LEFT REAR PASSENGER HEAD Z-AXIS REDUNDANT ACCELERATION

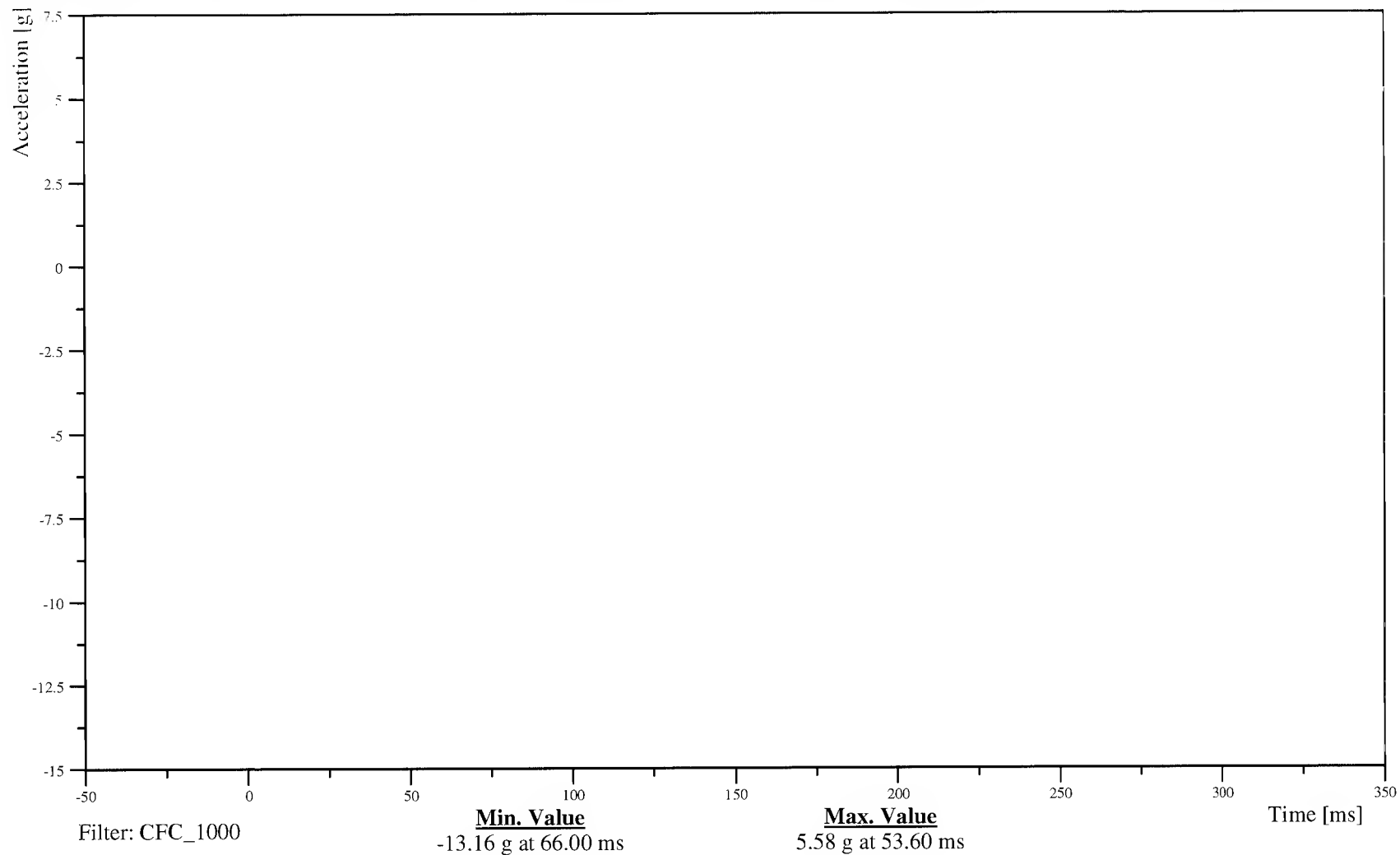
Customer: NHTSA

Test Number: C60106

14HEADCGRDSHACZA

TRC Inc. Test Lab: CTF

Test Number: 060320



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060320

56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

Date: 03/20/2006

Time: 12:01

LEFT REAR PASSENGER HEAD Z-AXIS REDUNDANT VELOCITY

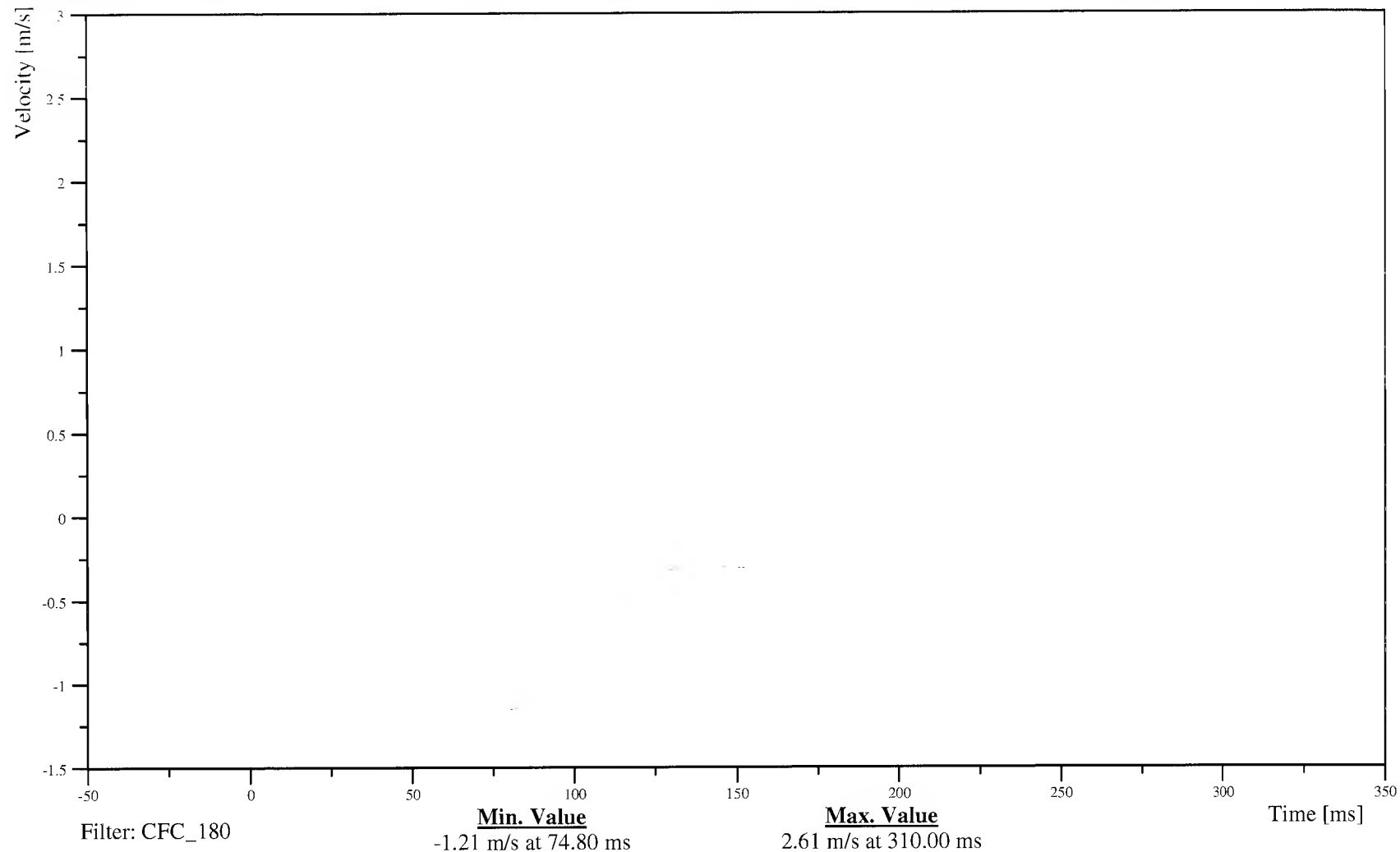
Customer: NHTSA

Test Number: C60106

14HEADCGRDSHVEZC

TRC Inc. Test Lab: CTF

Test Number: 060320



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060320



56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

Date: 03/20/2006

Time: 12:01

LEFT REAR PASSENGER HEAD RESULTANT ACCELERATION

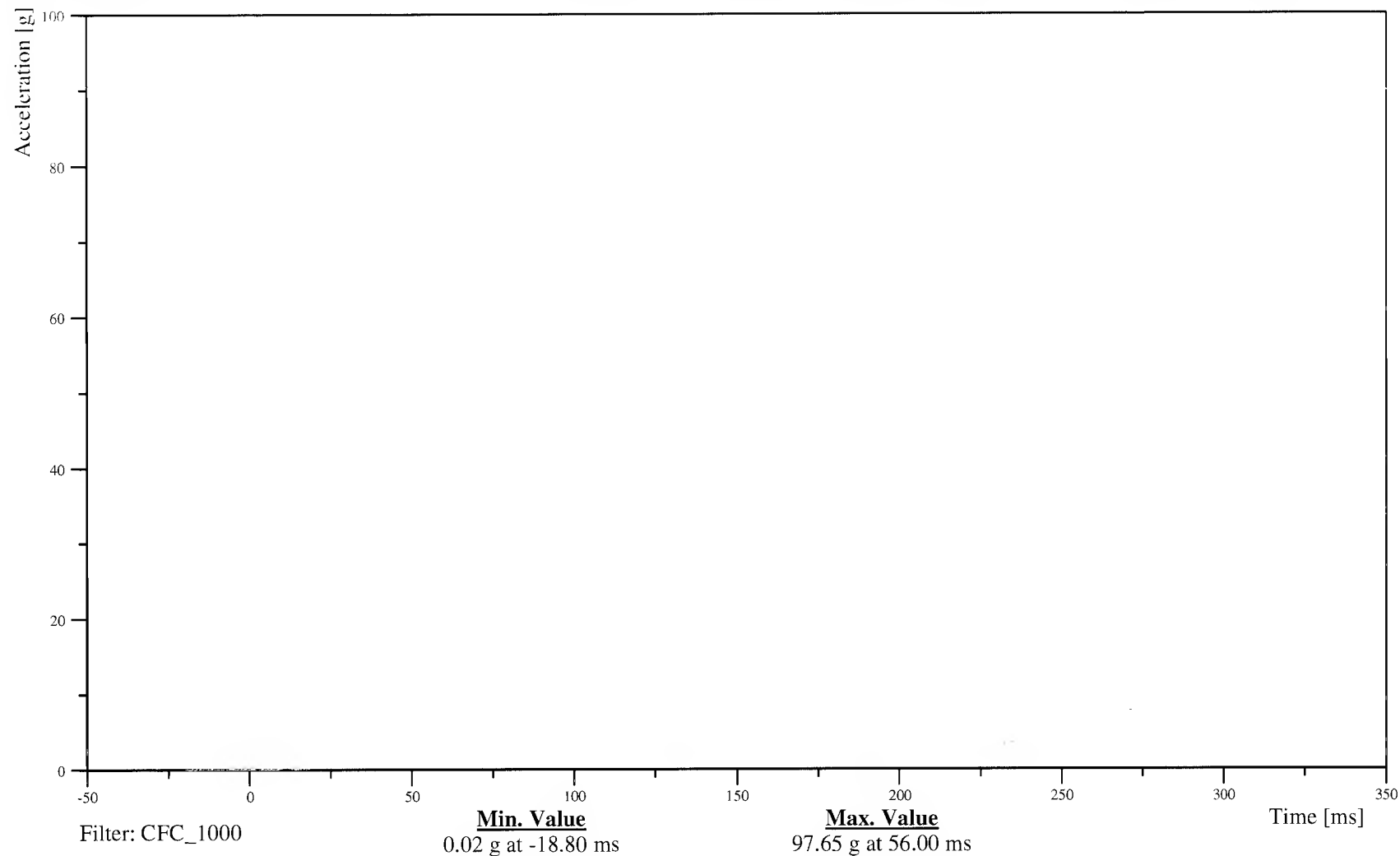
Customer: NHTSA

Test Number: C60106

14HEADCGRDSHACRA

TRC Inc. Test Lab: CTF

Test Number: 060320



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060320

56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

Date: 03/20/2006

Time: 12:01

LEFT REAR PASSENGER UPPER RIB Y-AXIS REDUNDANT ACCELERATION

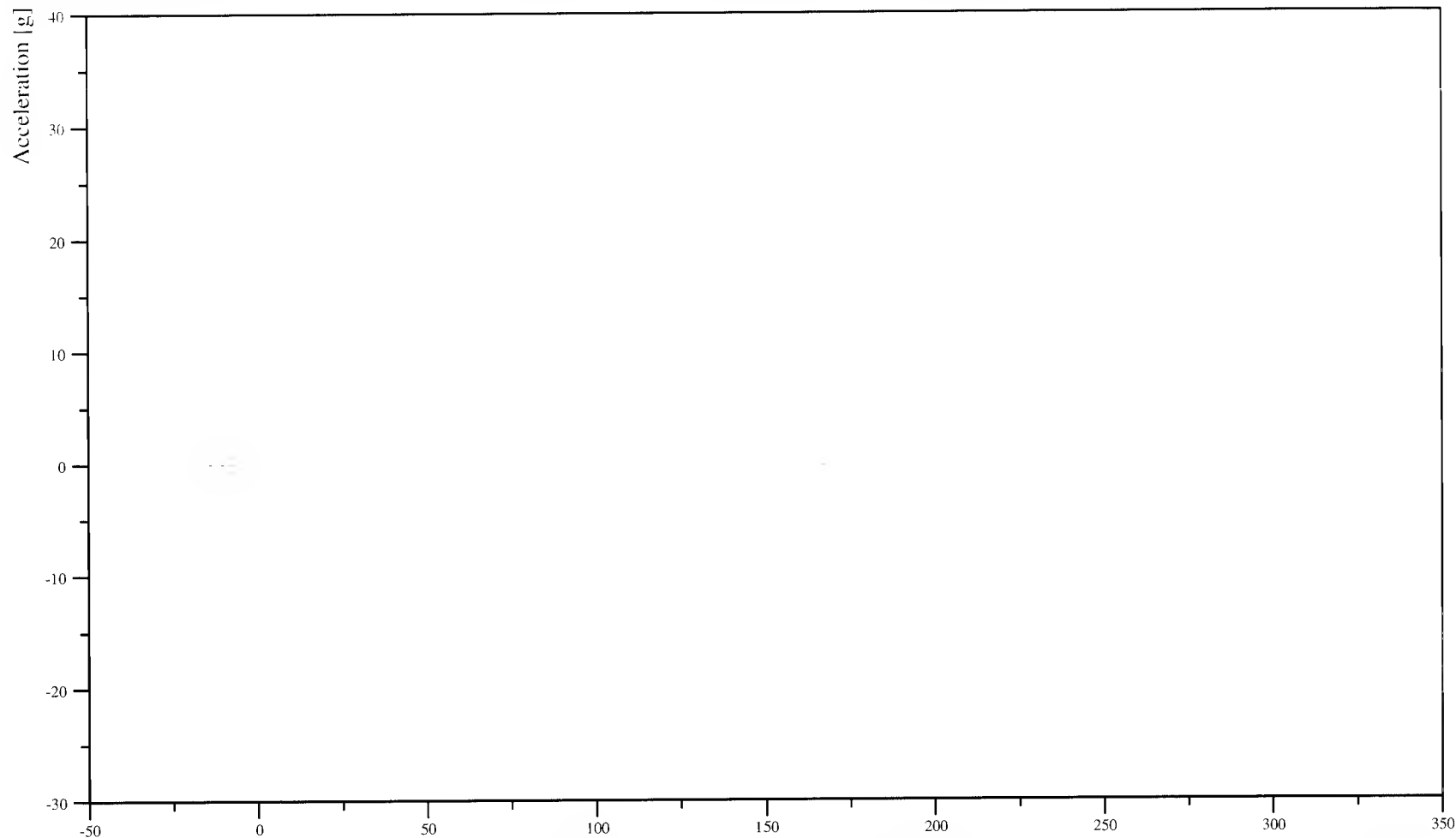
Customer: NHTSA

Test Number: C60106

14RIBSLURESHACYA

TRC Inc. Test Lab: CTF

Test Number: 060320



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060320

56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

Date: 03/20/2006

Time: 12:01

LEFT REAR PASSENGER UPPER RIB Y-AXIS REDUNDANT VELOCITY

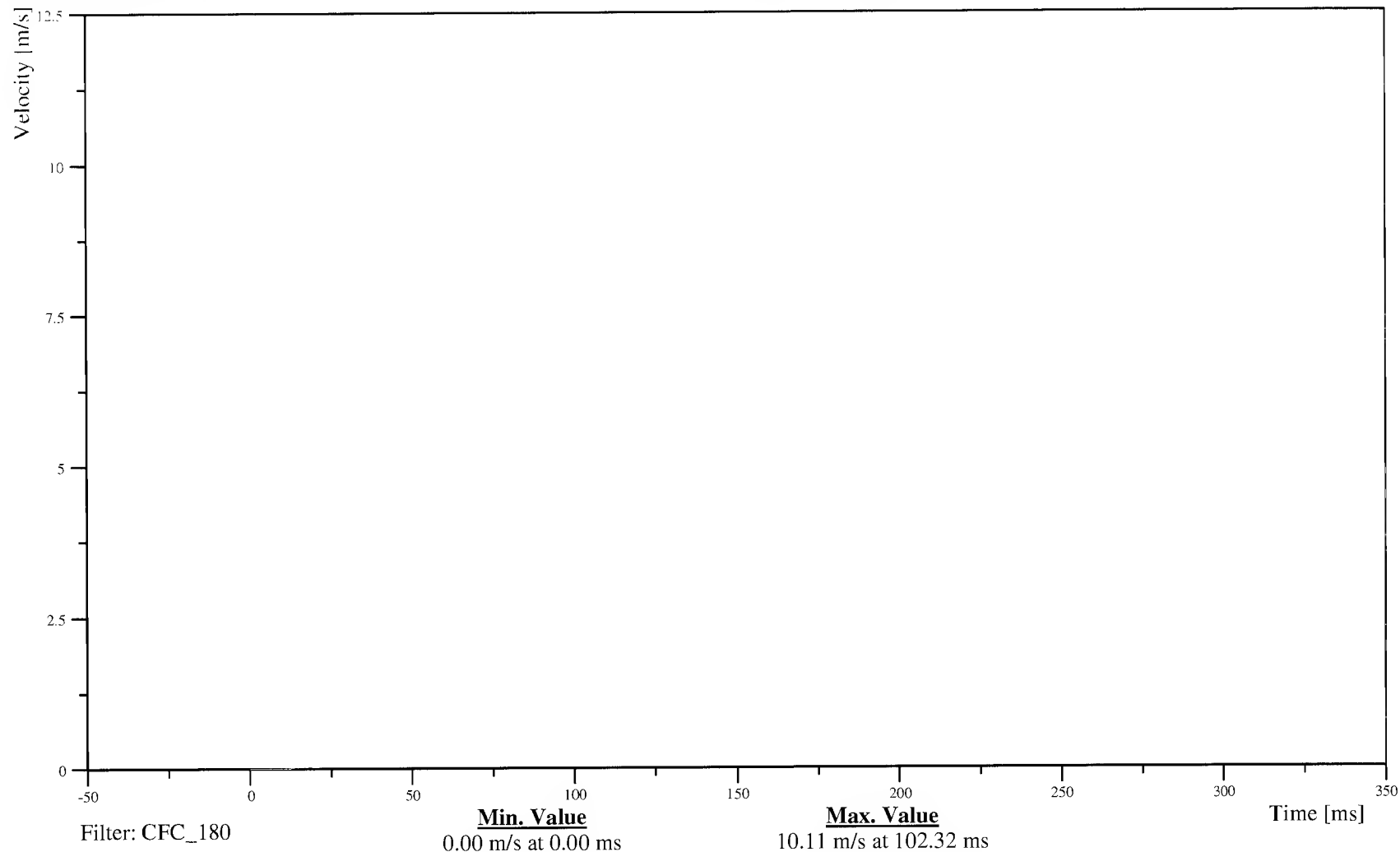
Customer: NHTSA

Test Number: C60106

14RIBSLURESHVEYC

TRC Inc. Test Lab: CTF

Test Number: 060320



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060320



56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

Date: 03/20/2006

Time: 12:01

LEFT REAR PASSENGER LOWER RIB Y-AXIS REDUNDANT ACCELERATION

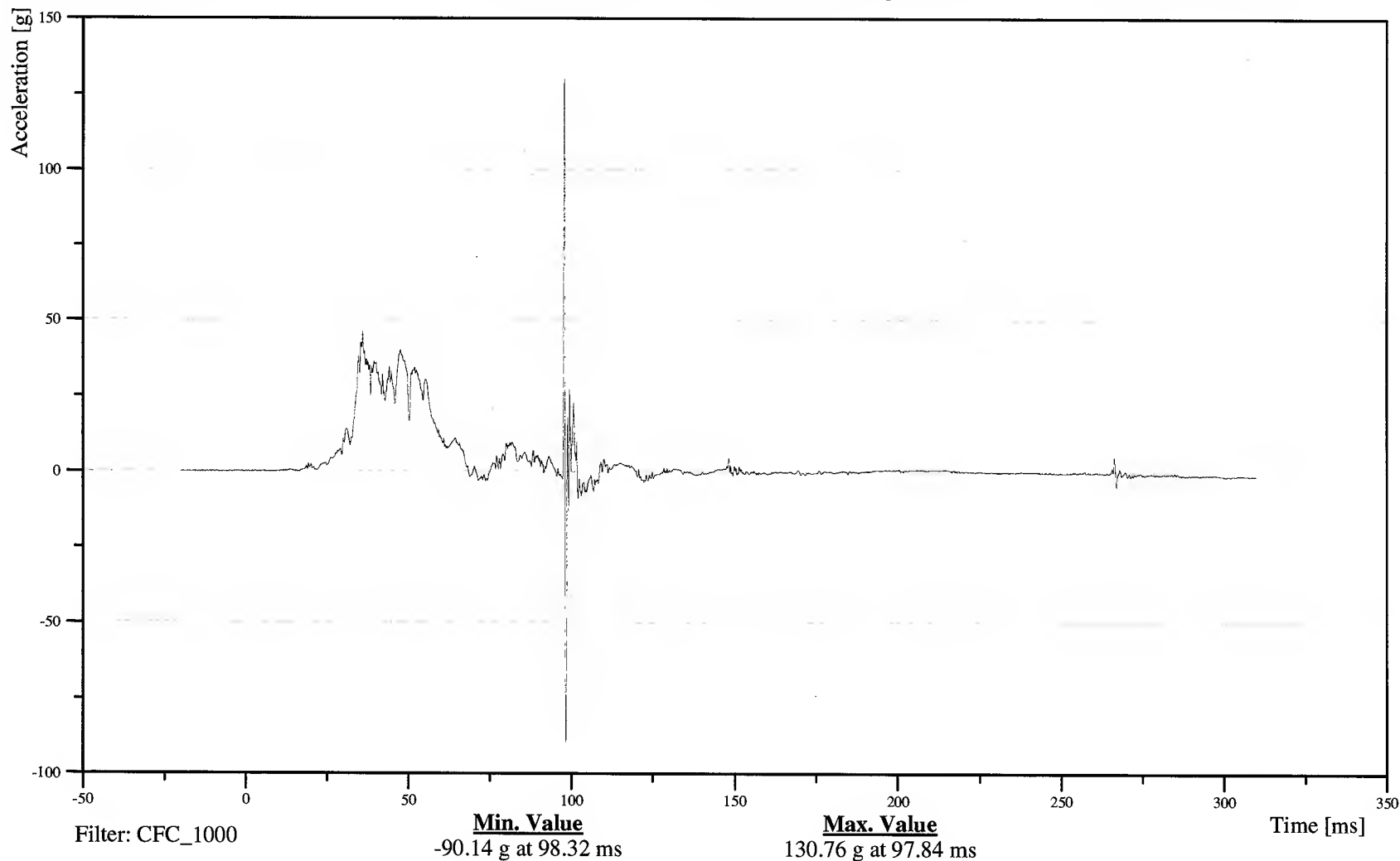
Customer: NHTSA

Test Number: C60106

14RIBSLLRESHACYA

TRC Inc. Test Lab: CTF

Test Number: 060320



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060320

If you have any questions concerning your claim for confidential treatment, please contact Ms. Heidi L. Coleman, Assistant Chief Counsel for General Law, at (202) 366-1834. For other questions, contact Mr. Case.

We appreciate your cooperation.

Sincerely,

A handwritten signature in black ink that reads "Marilynne Jacobs". The signature is fluid and cursive, with the first name and last name clearly distinguishable.

Marilynne Jacobs, Director  
Office of Vehicle Safety Compliance

3 Enclosures

cc: Kevin S. Ro, Toyota



56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

Date: 03/20/2006

Time: 12:01

LEFT REAR PASSENGER LOWER RIB Y-AXIS REDUNDANT VELOCITY

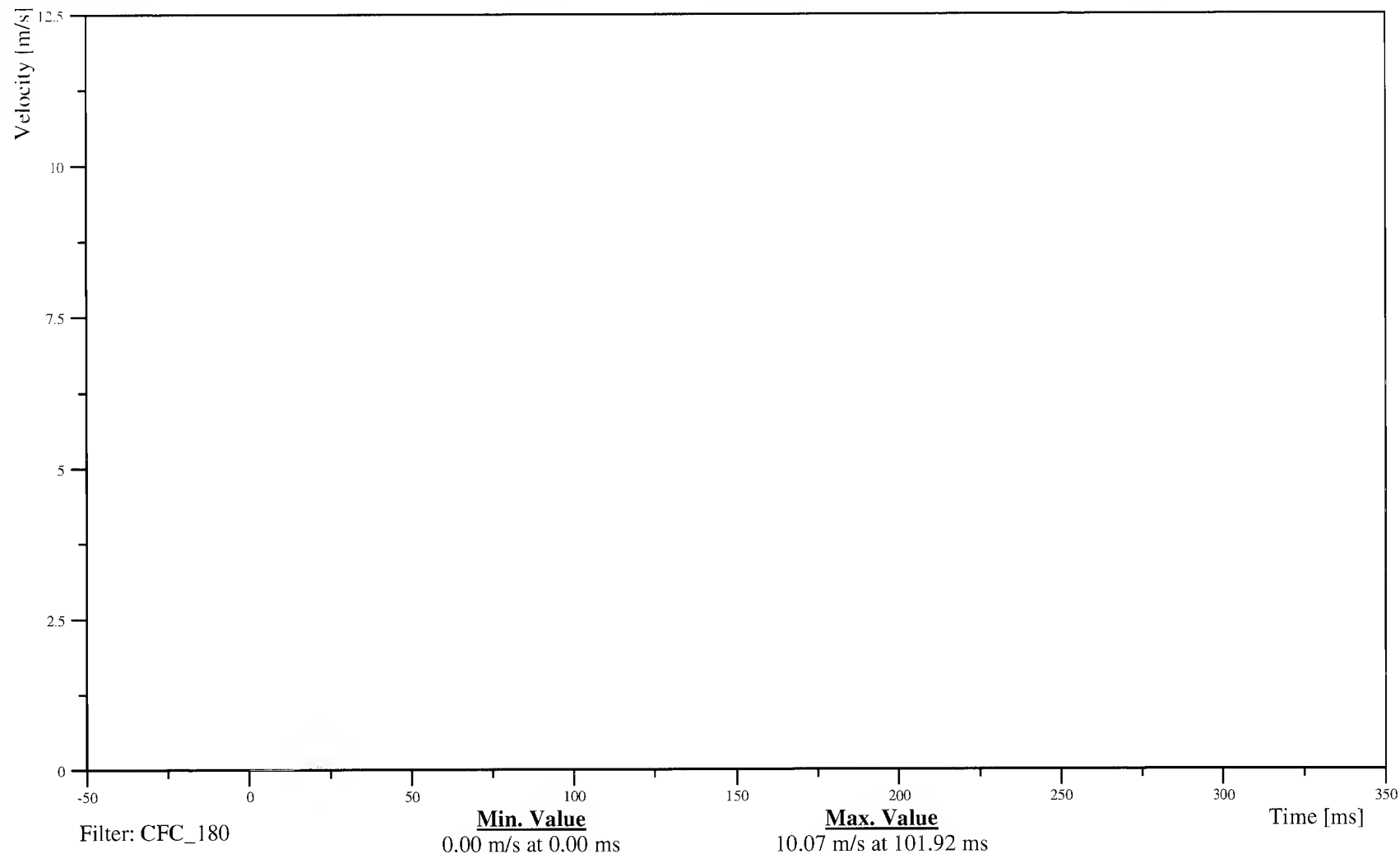
Customer: NHTSA

Test Number: C60106

14RIBSLLRESHVEYC

TRC Inc. Test Lab: CTF

Test Number: 060320



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060320

56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

Date: 03/20/2006

Time: 12:01

LEFT REAR PASSENGER LOWER SPINE Y-AXIS REDUNDANT ACCELERATION

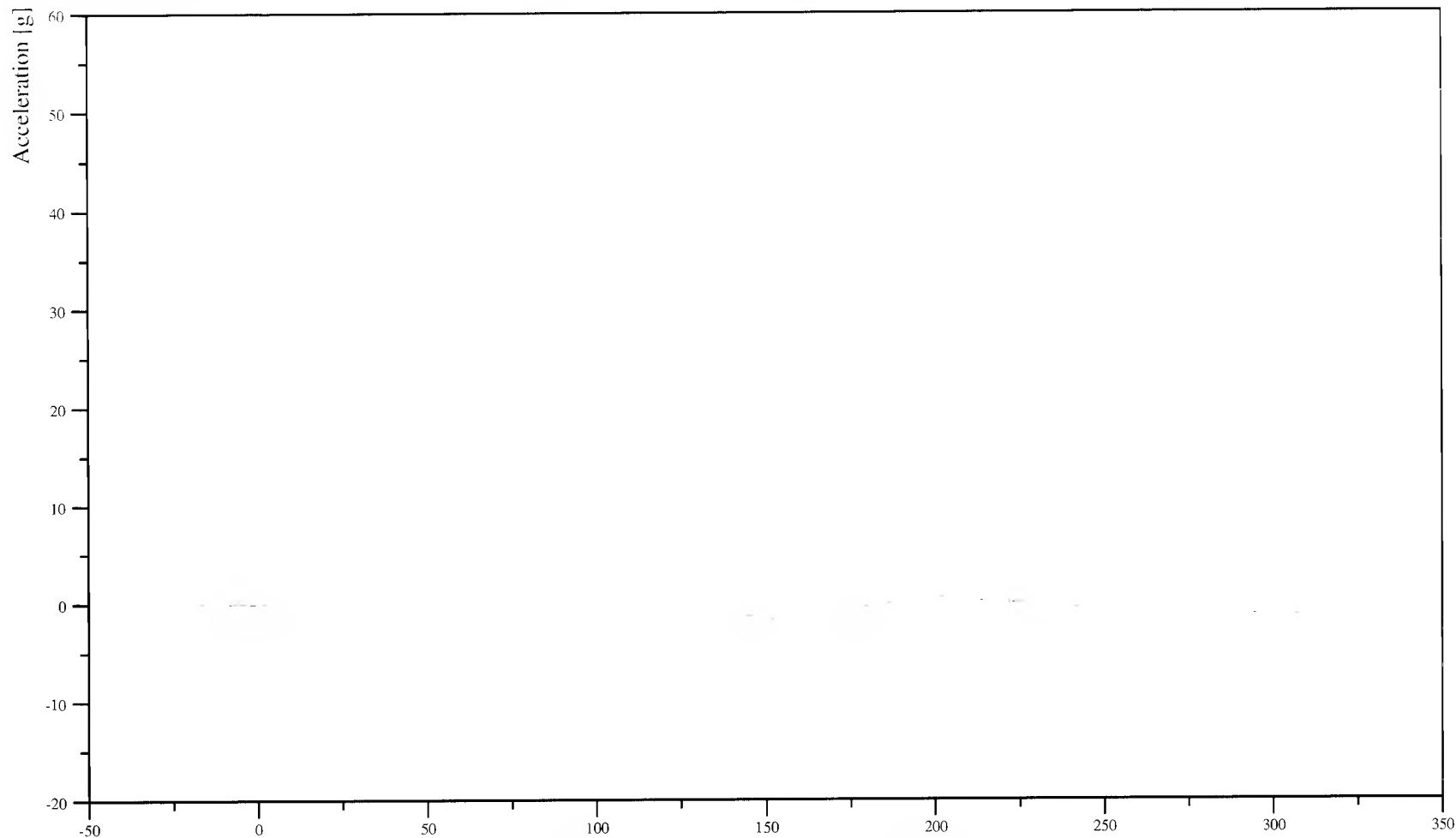
Customer: NHTSA

Test Number: C60106

14SPIN12RDSHACYA

TRC Inc. Test Lab: CTF

Test Number: 060320



Filter: CFC\_1000

Min. Value  
-10.34 g at 71.68 ms

Max. Value  
56.11 g at 47.28 ms

Time [ms]

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060320

56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

Date: 03/20/2006

Time: 12:01

LEFT REAR PASSENGER LOWER SPINE Y-AXIS REDUNDANT VELOCITY

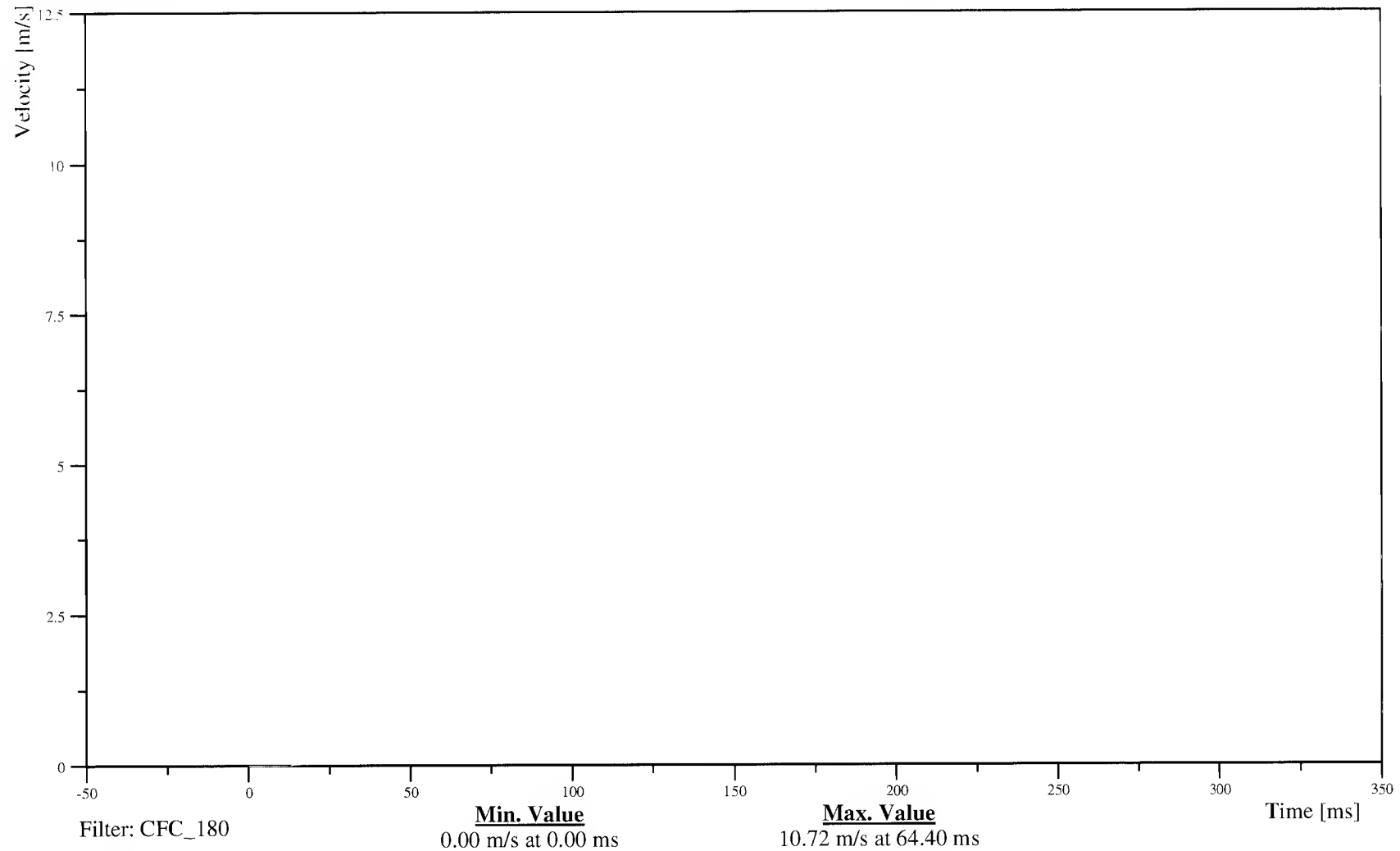
Customer: NHTSA

Test Number: C60106

14SPIN12RDSHVEYC

TRC Inc. Test Lab: CTF

Test Number: 060320



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060320

Test Vehicle Instrumentation Plots

Acceleration Data - Filter Class 60

Integration Data - Filter Class 180

56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

Date: 03/20/2006

Time: 12:01

RIGHT SIDE SILL AT FRONT SEAT X-AXIS ACCELERATION

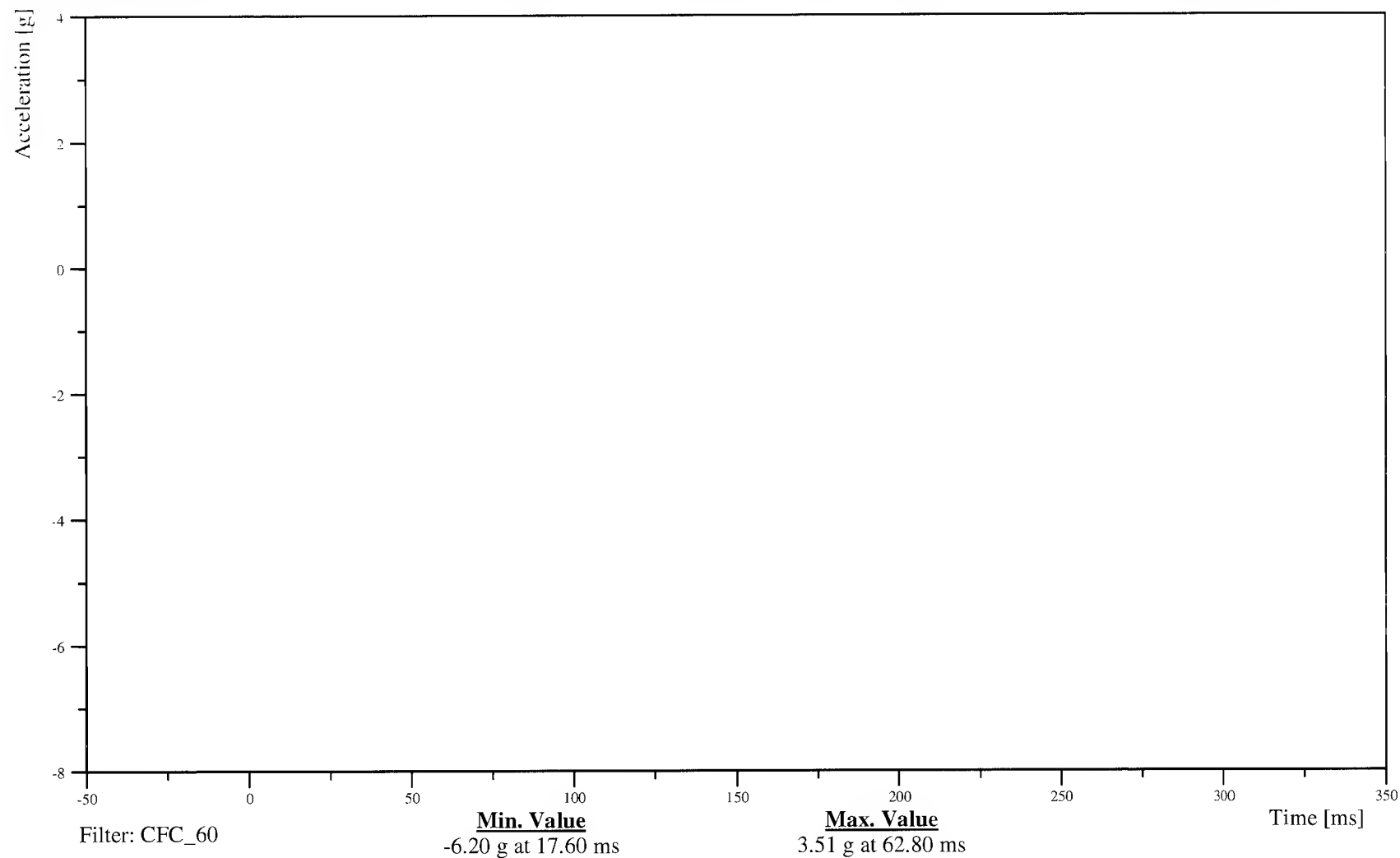
Customer: NHTSA

Test Number: C60106

16SILBFR0000ACXD

TRC Inc. Test Lab: CTF

Test Number: 060320



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060320



# 56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

Date: 03/20/2006

Time: 12:01

## RIGHT SIDE SILL AT FRONT SEAT X-AXIS VELOCITY

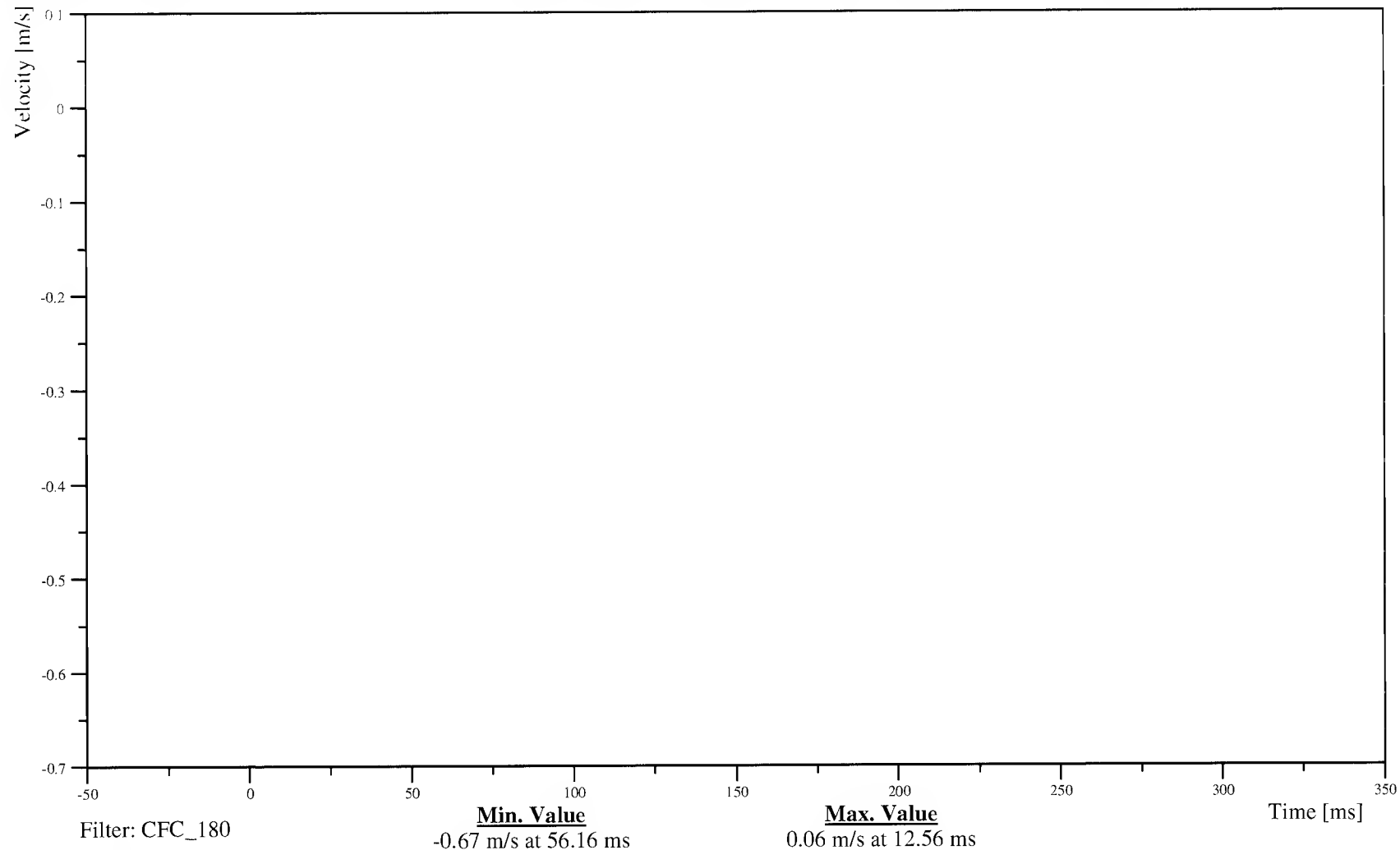
Customer: NHTSA

Test Number: C60106

16SILBFR0000VEXC

TRC Inc. Test Lab: CTF

Test Number: 060320



B-82

060320

56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

Date: 03/20/2006

Time: 12:01

RIGHT SIDE SILL AT FRONT SEAT Y-AXIS ACCELERATION

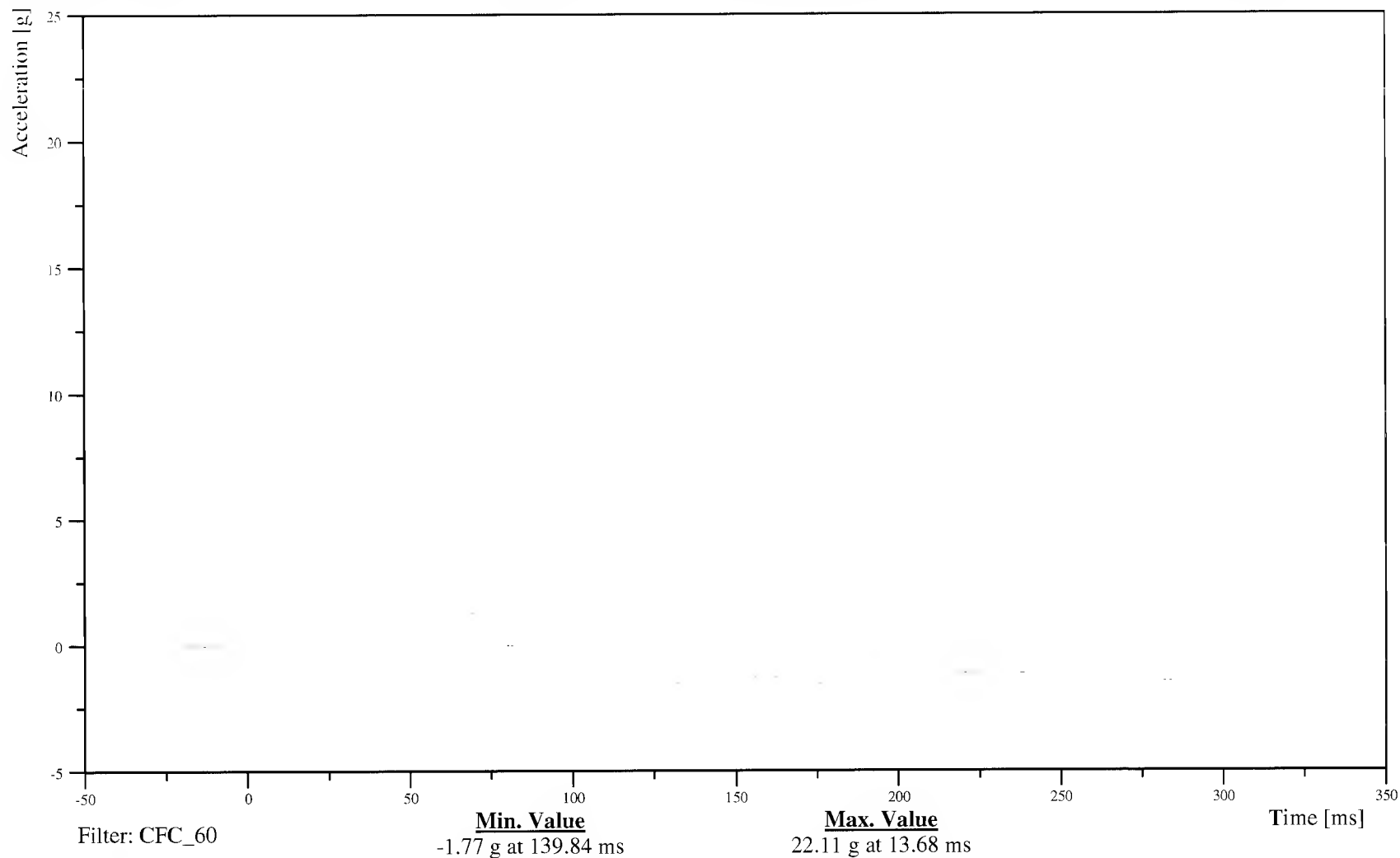
Customer: NHTSA

Test Number: C60106

16SILBFR0000ACYD

TRC Inc. Test Lab: CTF

Test Number: 060320



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060320

56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

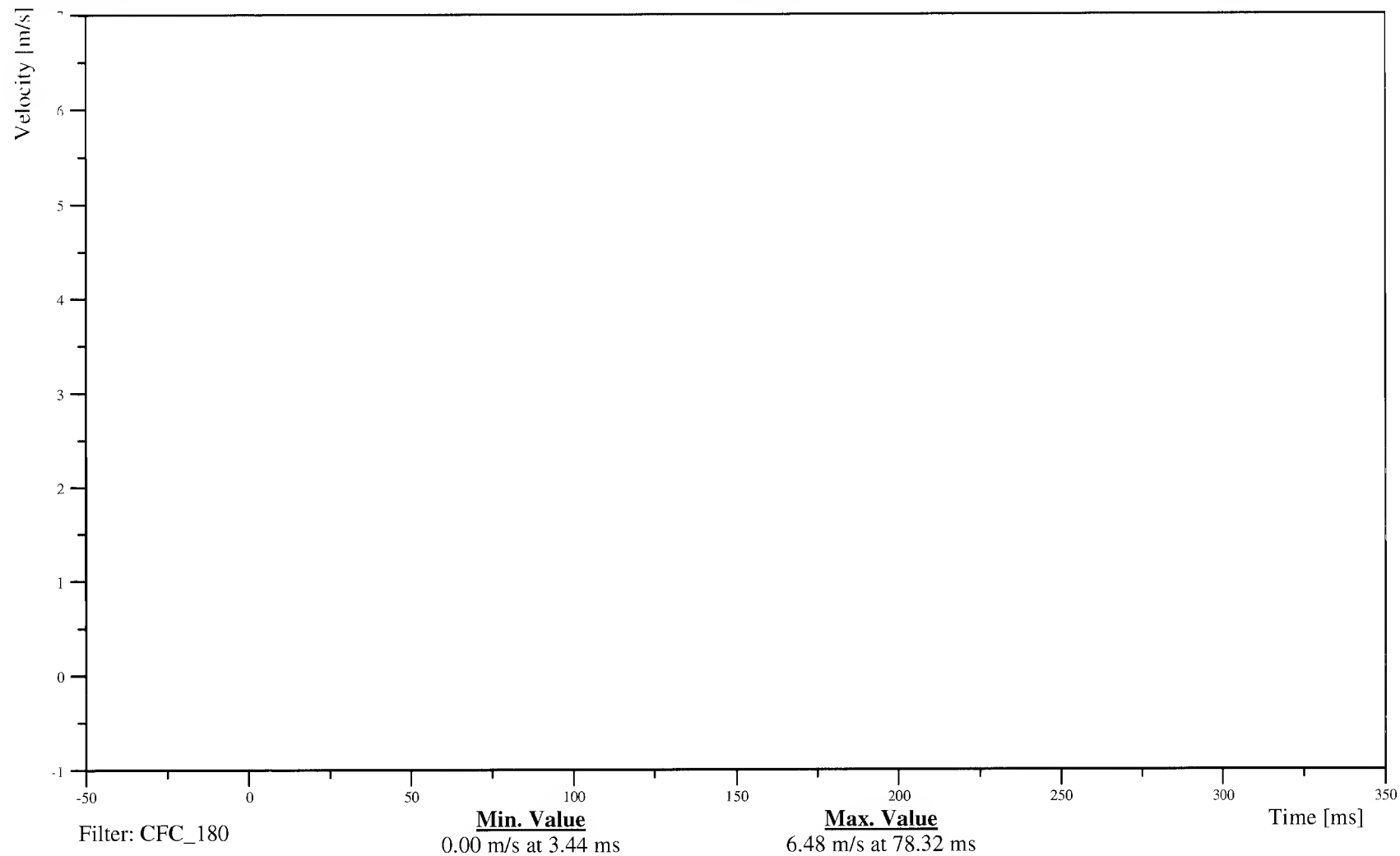
RIGHT SIDE SILL AT FRONT SEAT Y-AXIS VELOCITY

Date: 03/20/2006  
Time: 12:01

Customer: NHTSA  
Test Number: C60106

16SILBFR0000VEYC

TRC Inc. Test Lab: CTF  
Test Number: 060320



B-84

060320

56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

Date: 03/29/2006

Time: 12:01

RIGHT SIDE SILL AT FRONT SEAT Z-AXIS ACCELERATION

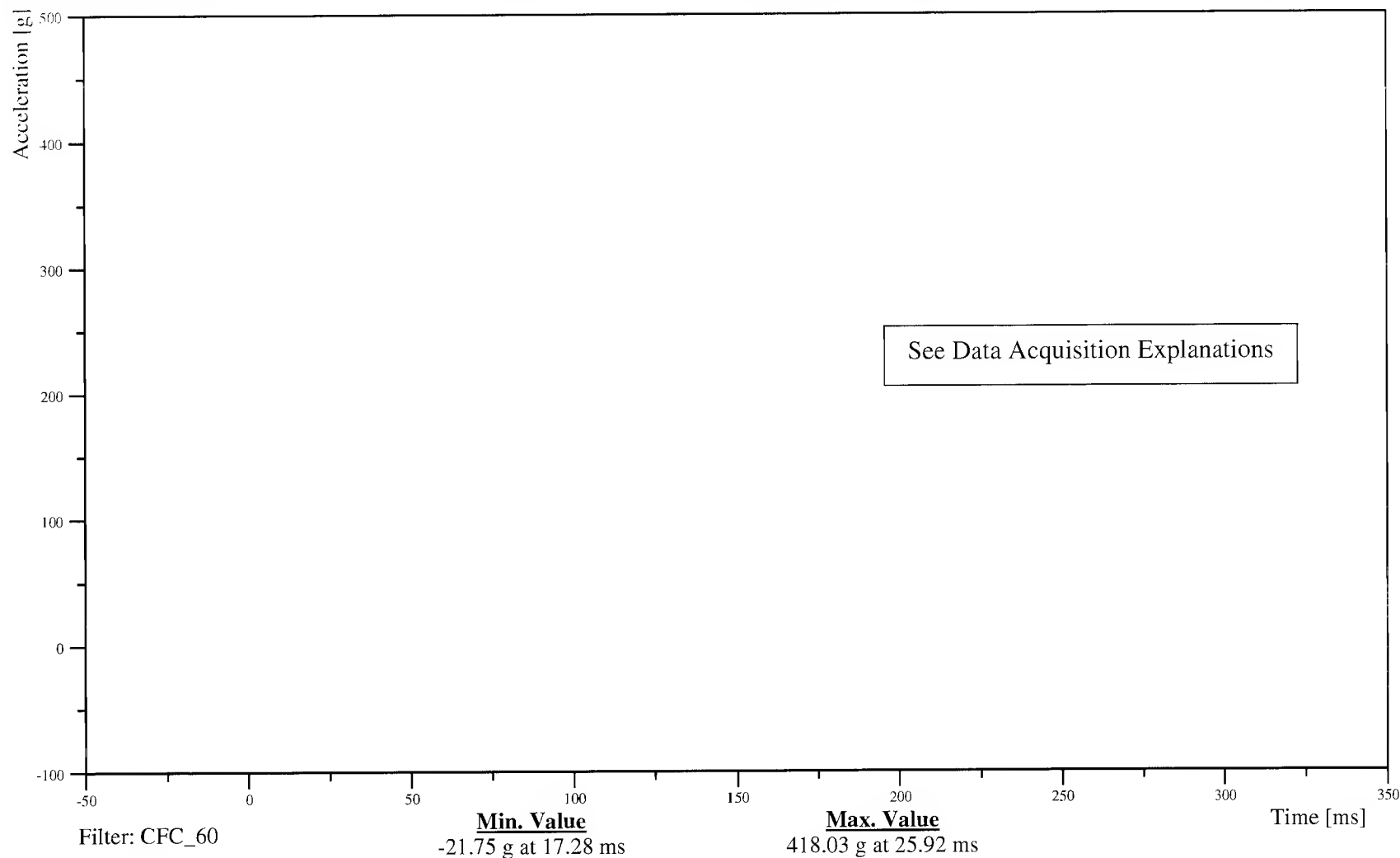
Customer: NHTSA

Test Number: C60106

16SILBFR0000ACZD

TRC Inc. Test Lab: CTF

Test Number: 060320



B-85

060320

56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

Date: 03/20/2006

Time: 12:01

RIGHT SIDE SILL AT FRONT SEAT Z-AXIS VELOCITY

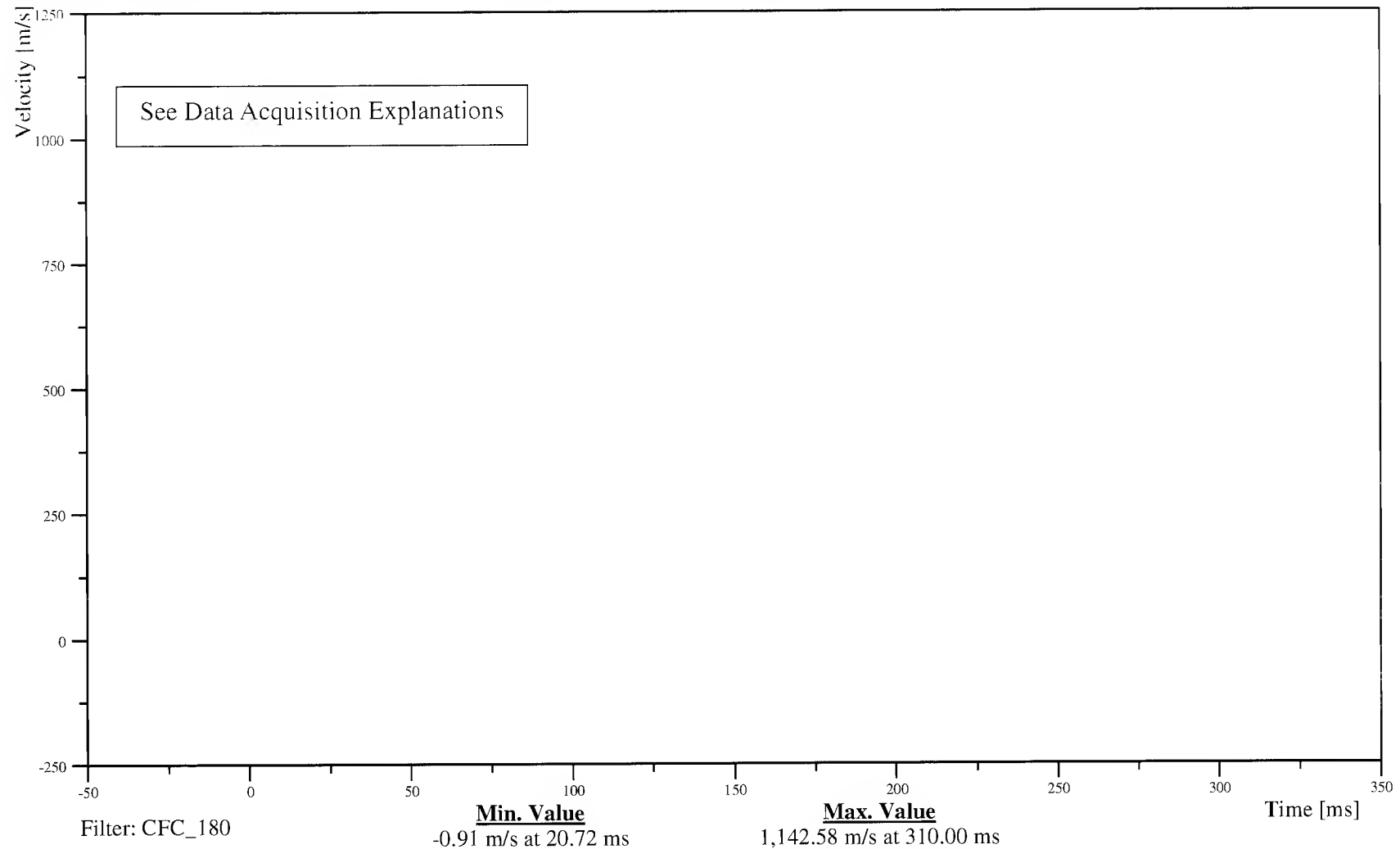
Customer: NHTSA

Test Number: C60106

16SILBFR0000VEZC

TRC Inc. Test Lab: CTF

Test Number: 060320



B-86

060320



# 56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

Date: 03/20/2006

Time: 12:01

## RIGHT SIDE SILL AT FRONT SEAT RESULTANT ACCELERATION

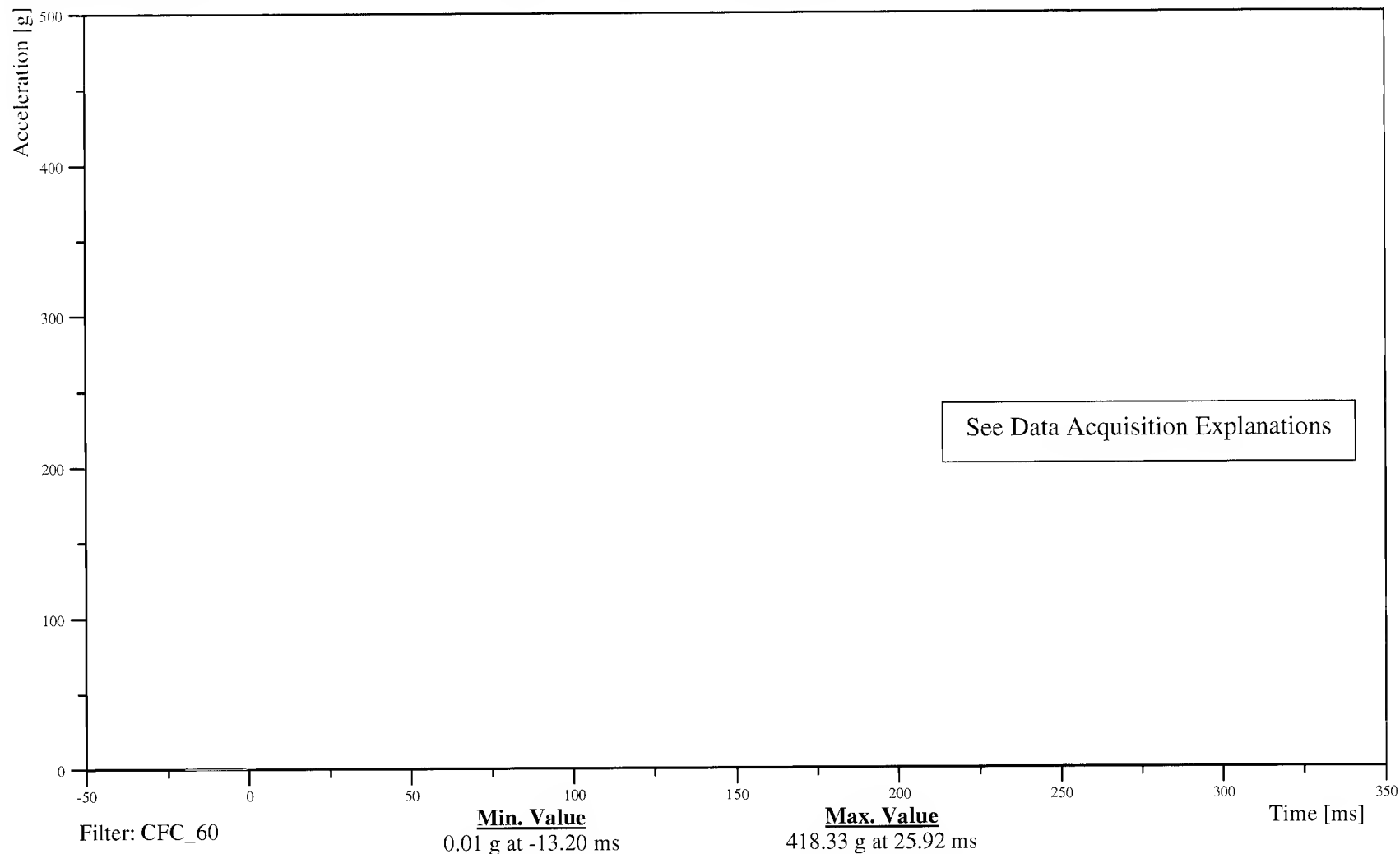
Customer: NHTSA

Test Number: C60106

16SILBFR0000ACRD

TRC Inc. Test Lab: CTF

Test Number: 060320



B-87

060320

56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

Date: 03/20/2006

Time: 12:01

RIGHT SIDE SILL AT REAR SEAT X-AXIS ACCELERATION

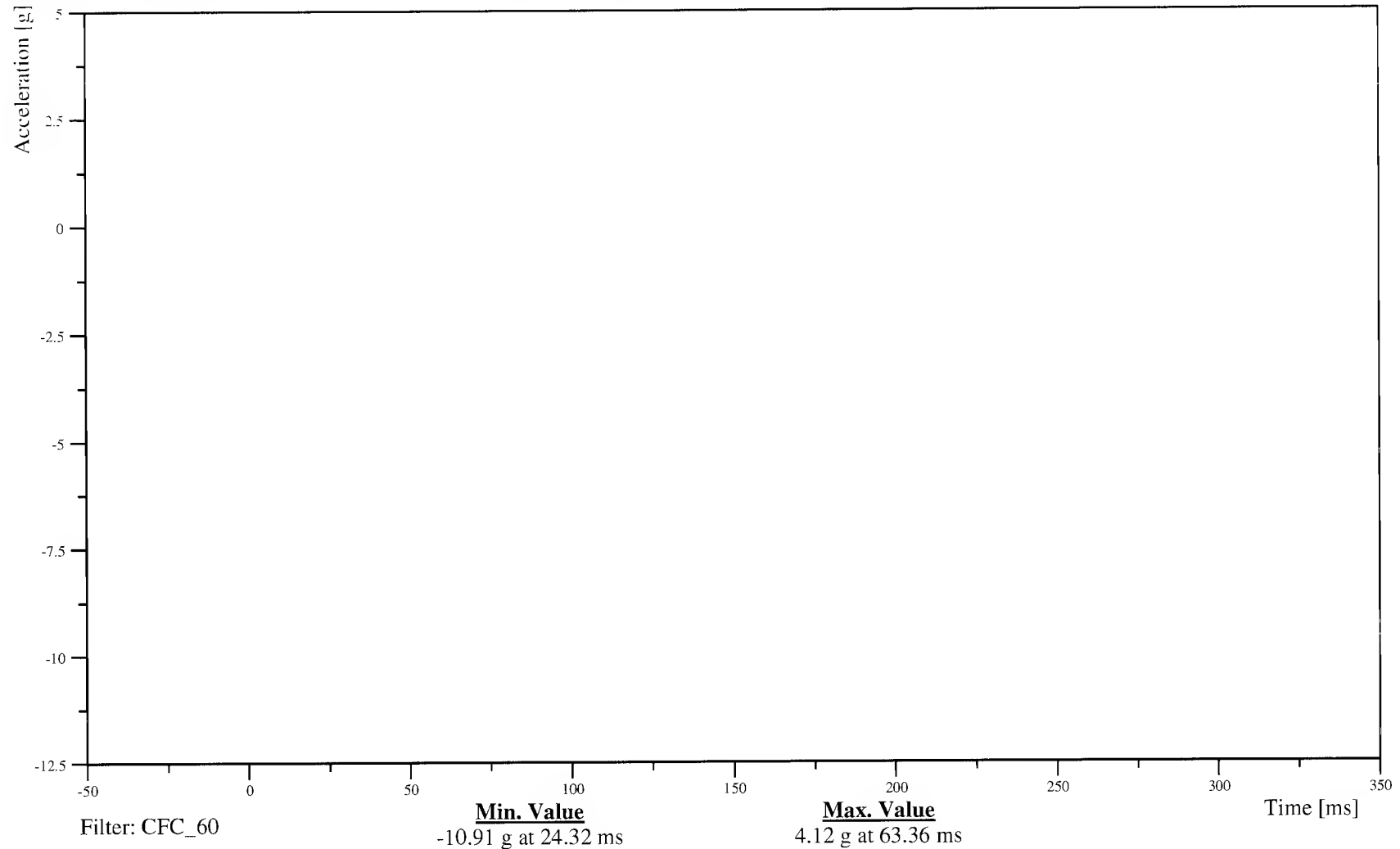
Customer: NHTSA

Test Number: C60106

16SILBRE0000ACXD

TRC Inc. Test Lab: CTF

Test Number: 060320



B-88

060320

56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

Date: 03/20/2006

Time: 12:01

RIGHT SIDE SILL AT REAR SEAT X-AXIS VELOCITY

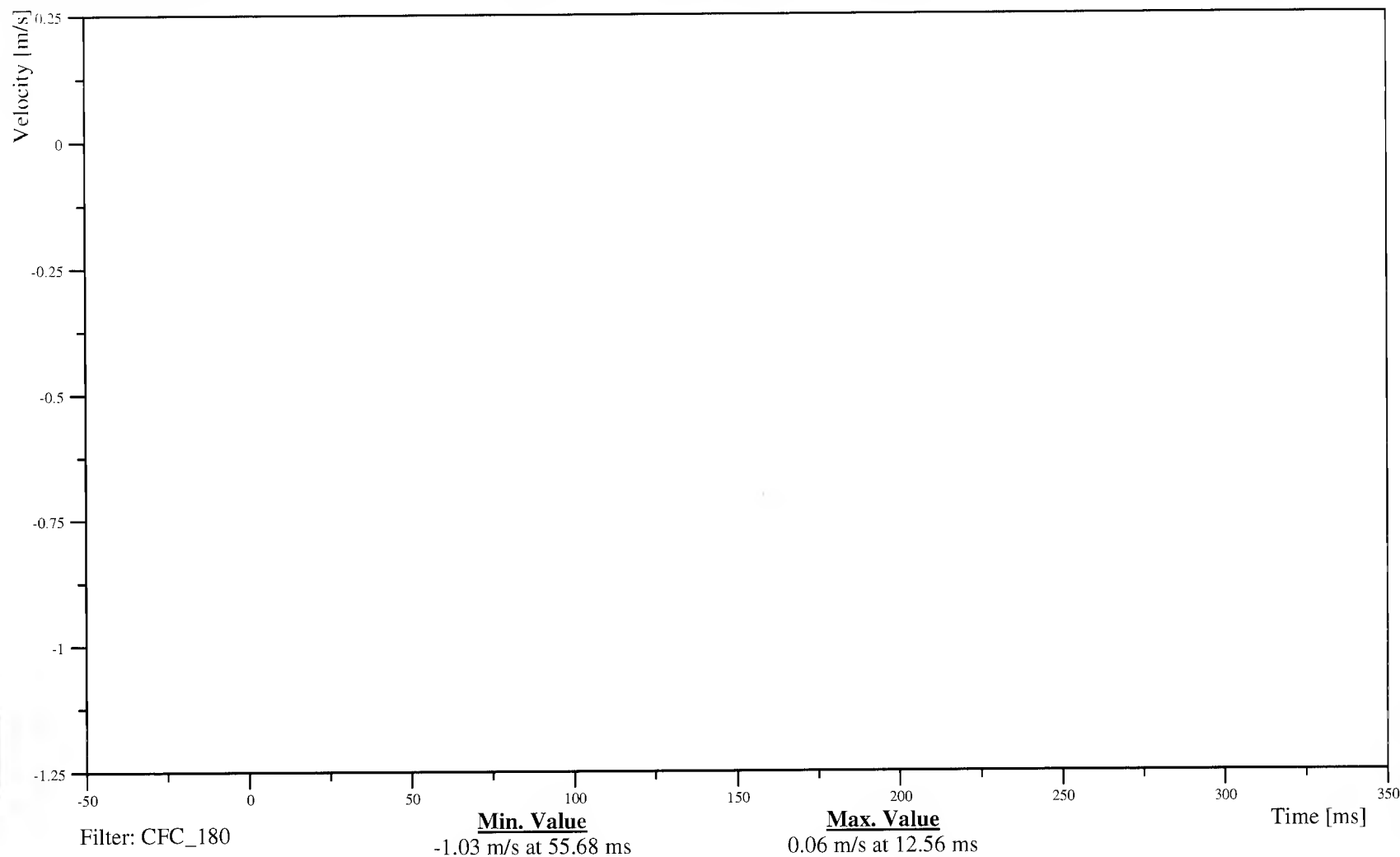
Customer: NHTSA

Test Number: C60106

16SILBRE0000VEXC

TRC Inc. Test Lab: CTF

Test Number: 060320



B-89

060320

56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

Date: 03/20/2006

RIGHT SIDE SILL AT REAR SEAT Y-AXIS ACCELERATION

Time: 12.01

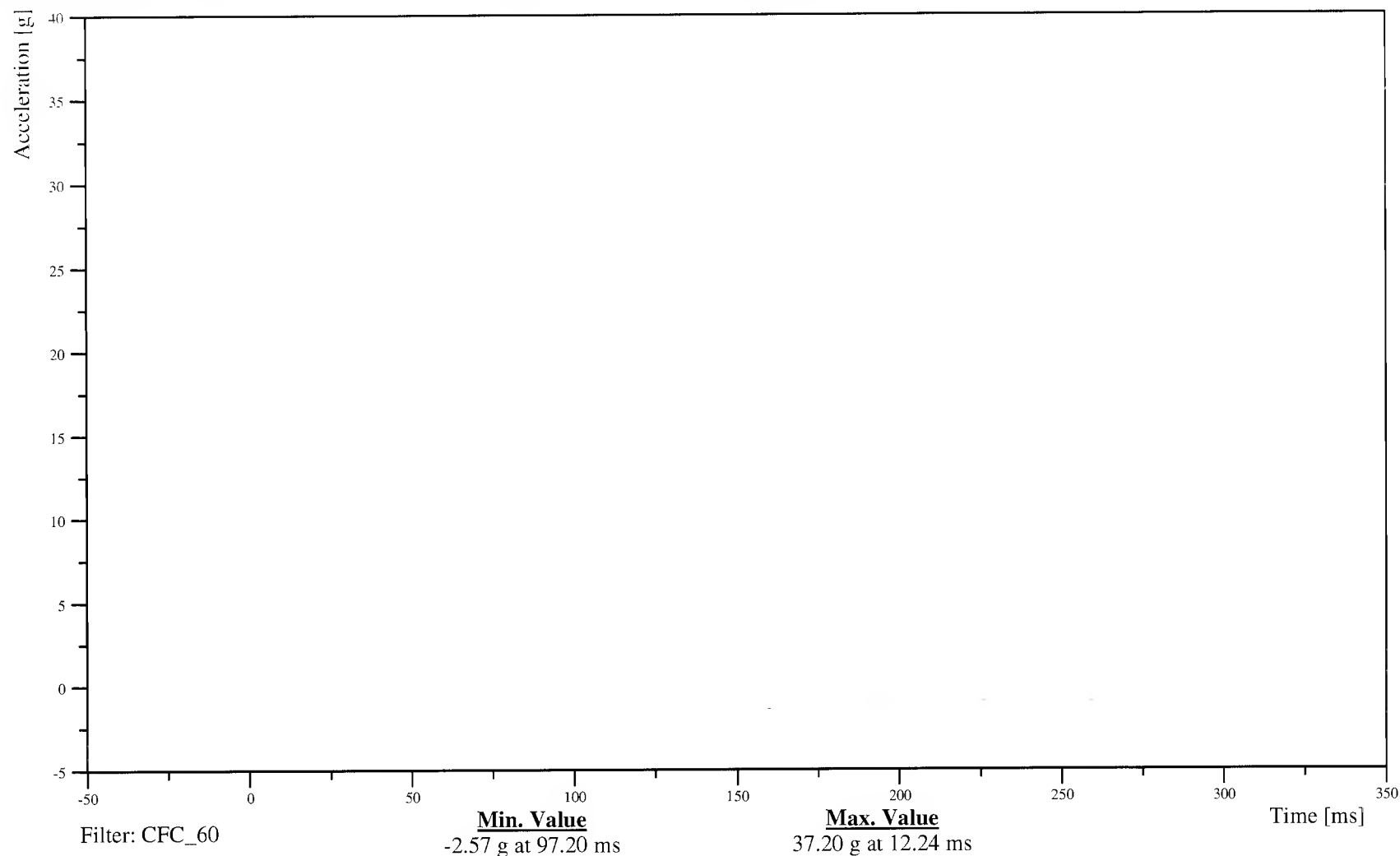
Customer: NHTSA

Test Number: C60106

16SILBRE0000ACYD

TRC Inc. Test Lab: CTF

Test Number: 060320



B-90

060320

56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

Date: 03/20/2006

Time: 12:01

RIGHT SIDE SILL AT REAR SEAT Y-AXIS VELOCITY

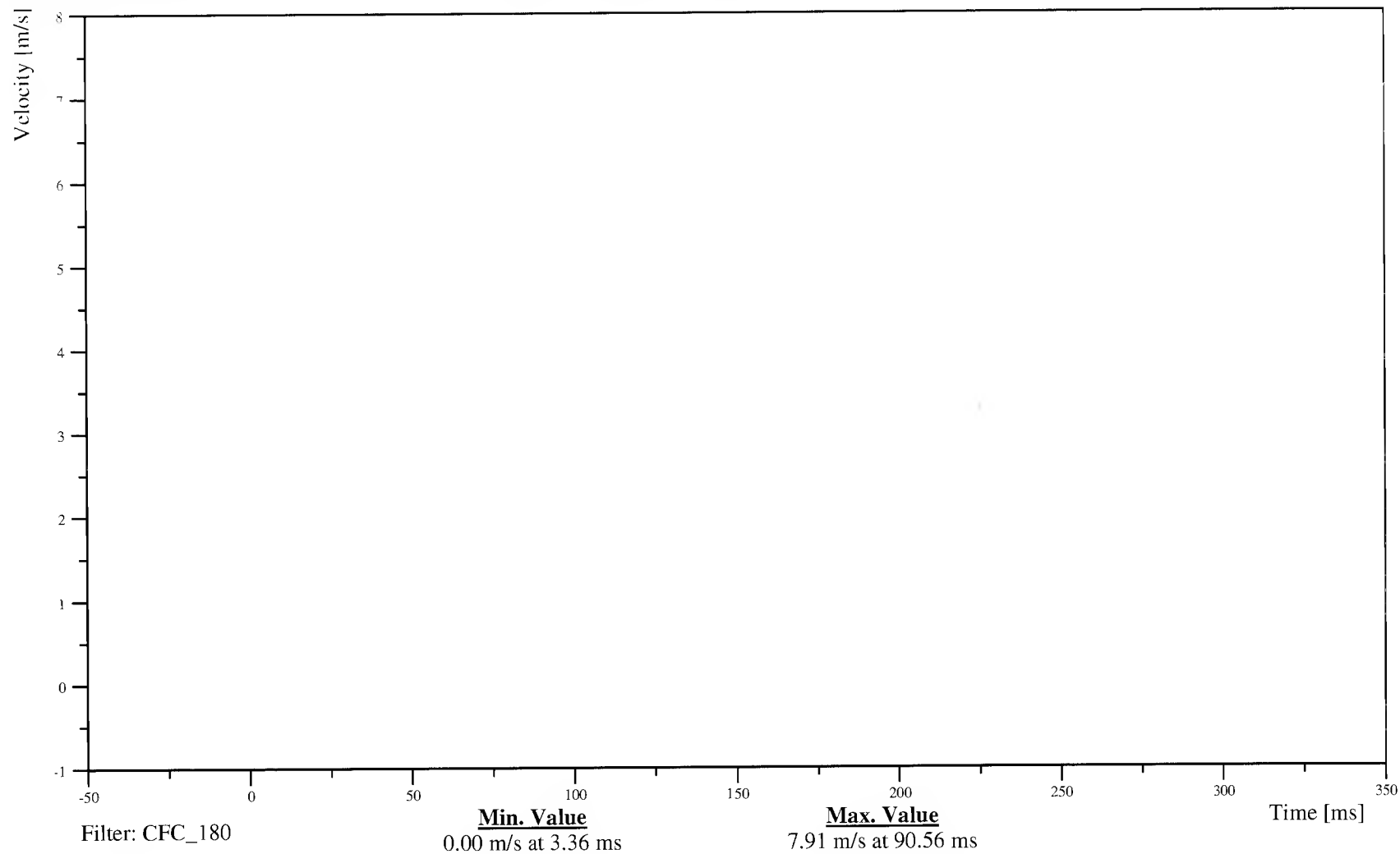
Customer: NHTSA

Test Number: C60106

16SILBRE0000VEYC

TRC Inc. Test Lab: CTF

Test Number: 060320



B-91

060320



56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

Date: 03/20/2006

RIGHT SIDE SILL AT REAR SEAT Z-AXIS ACCELERATION

Time: 12:01

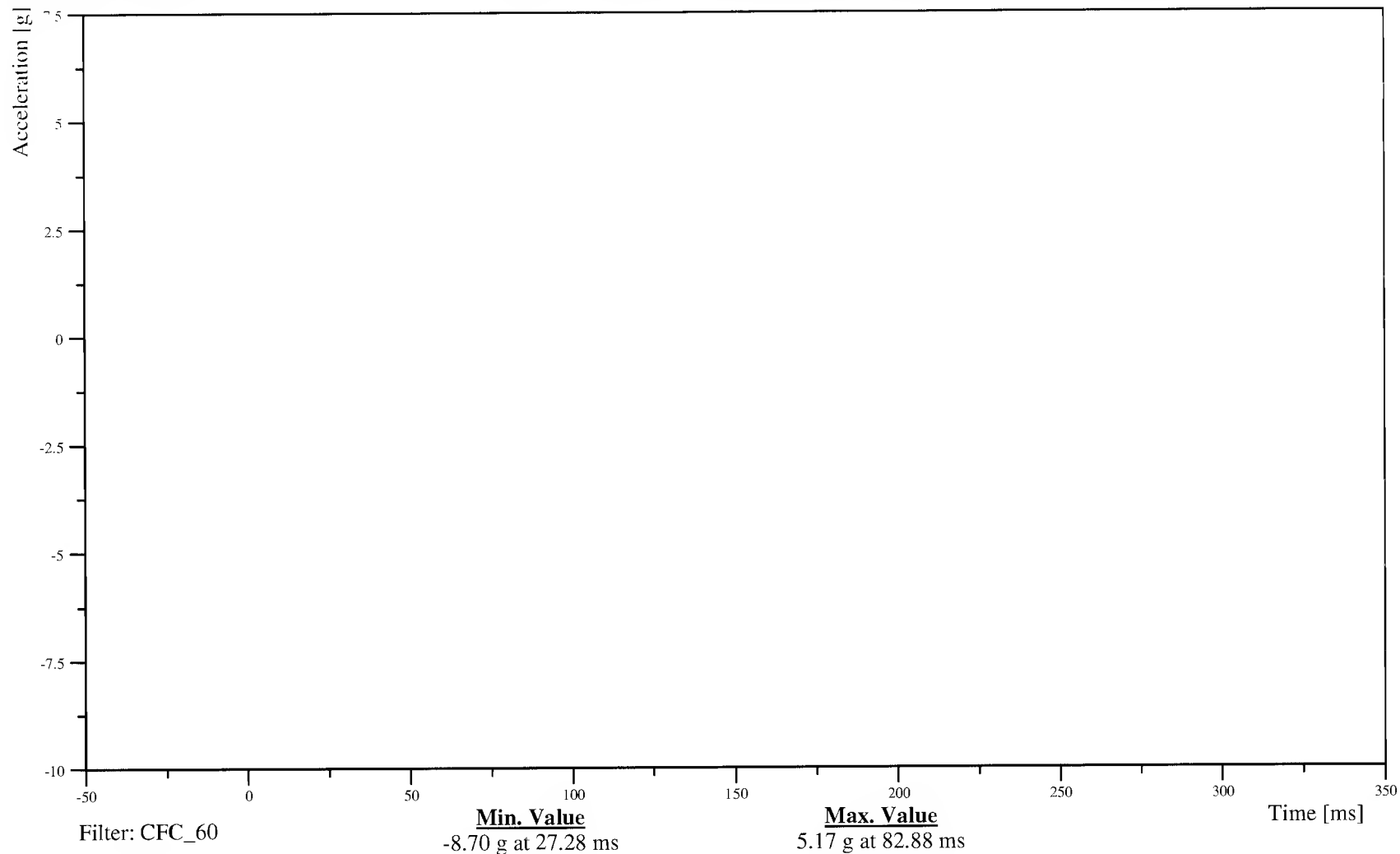
Customer: NHTSA

Test Number: C60106

16SILBRE0000ACZD

TRC Inc. Test Lab: CTF

Test Number: 060320



B-92

060320

# 56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

Date: 03/20/2006

Time: 12:01

## RIGHT SIDE SILL AT REAR SEAT Z-AXIS VELOCITY

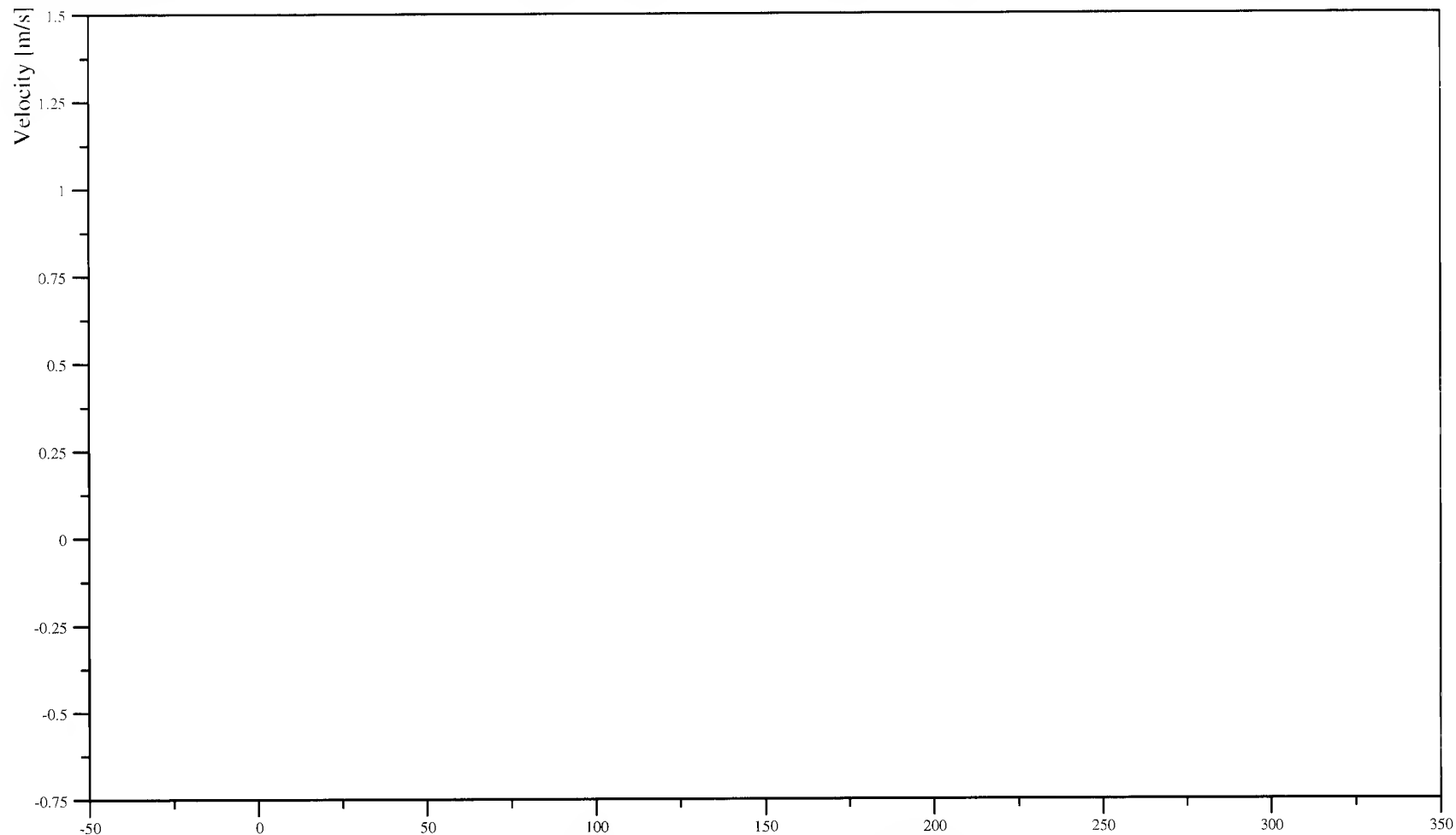
Customer: NHTSA

Test Number: C60106

16SILBRE0000VEZC

TRC Inc. Test Lab: CTF

Test Number: 060320



Filter: CFC\_180

Min. Value  
-0.69 m/s at 67.76 ms

Max. Value  
1.30 m/s at 208.48 ms

Time [ms]

56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

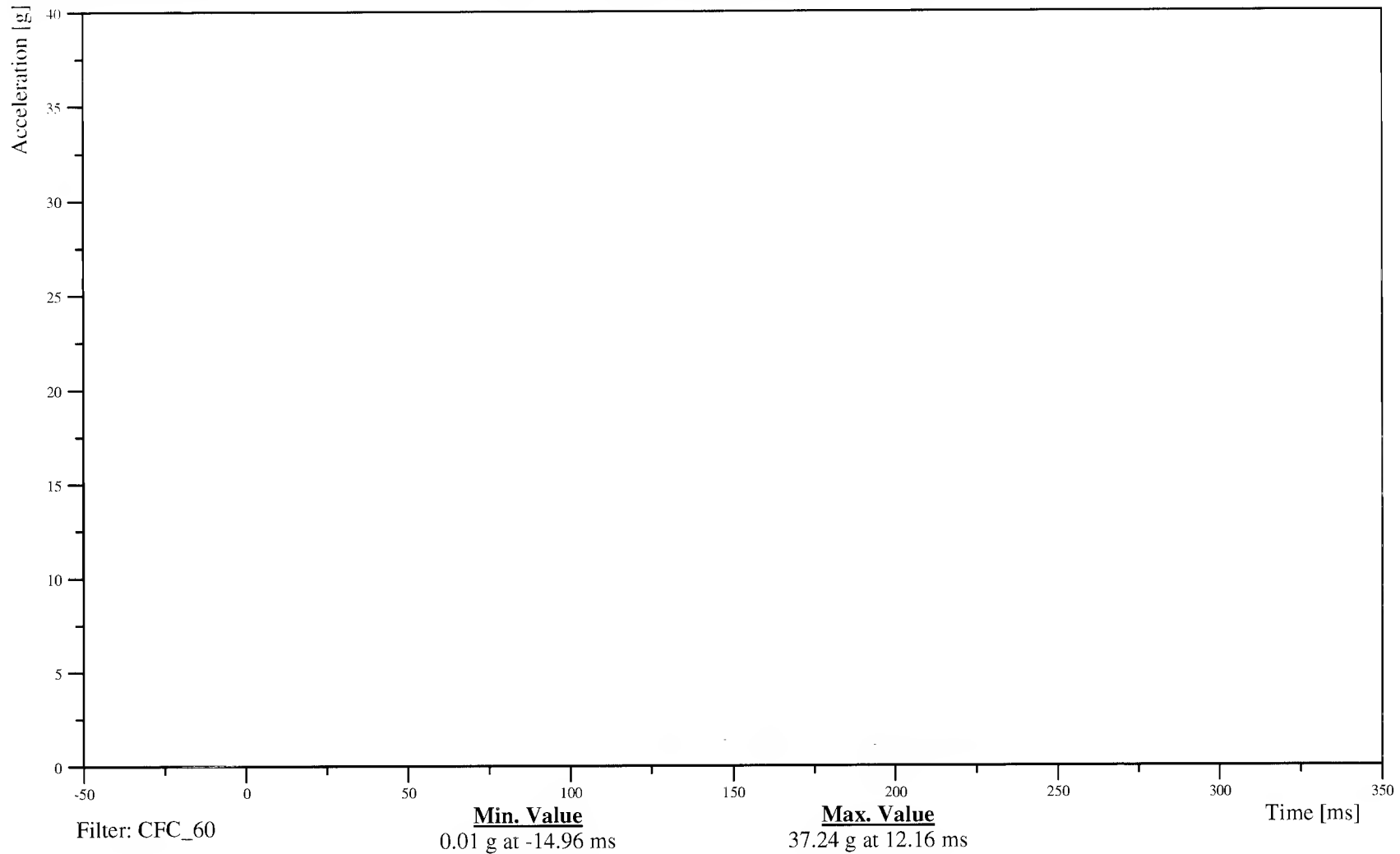
Date: 03/20/2006  
Time: 12:01

RIGHT SIDE SILL AT REAR SEAT RESULTANT ACCELERATION

Customer: NHTSA  
Test Number: C60106

16SILBRE0000ACRD

TRC Inc. Test Lab: CTF  
Test Number: 060320



B-94

060320

56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

Date: 03/20/2006

REAR FLOORPAN ABOVE AXLE X-AXIS ACCELERATION

Time: 12.01

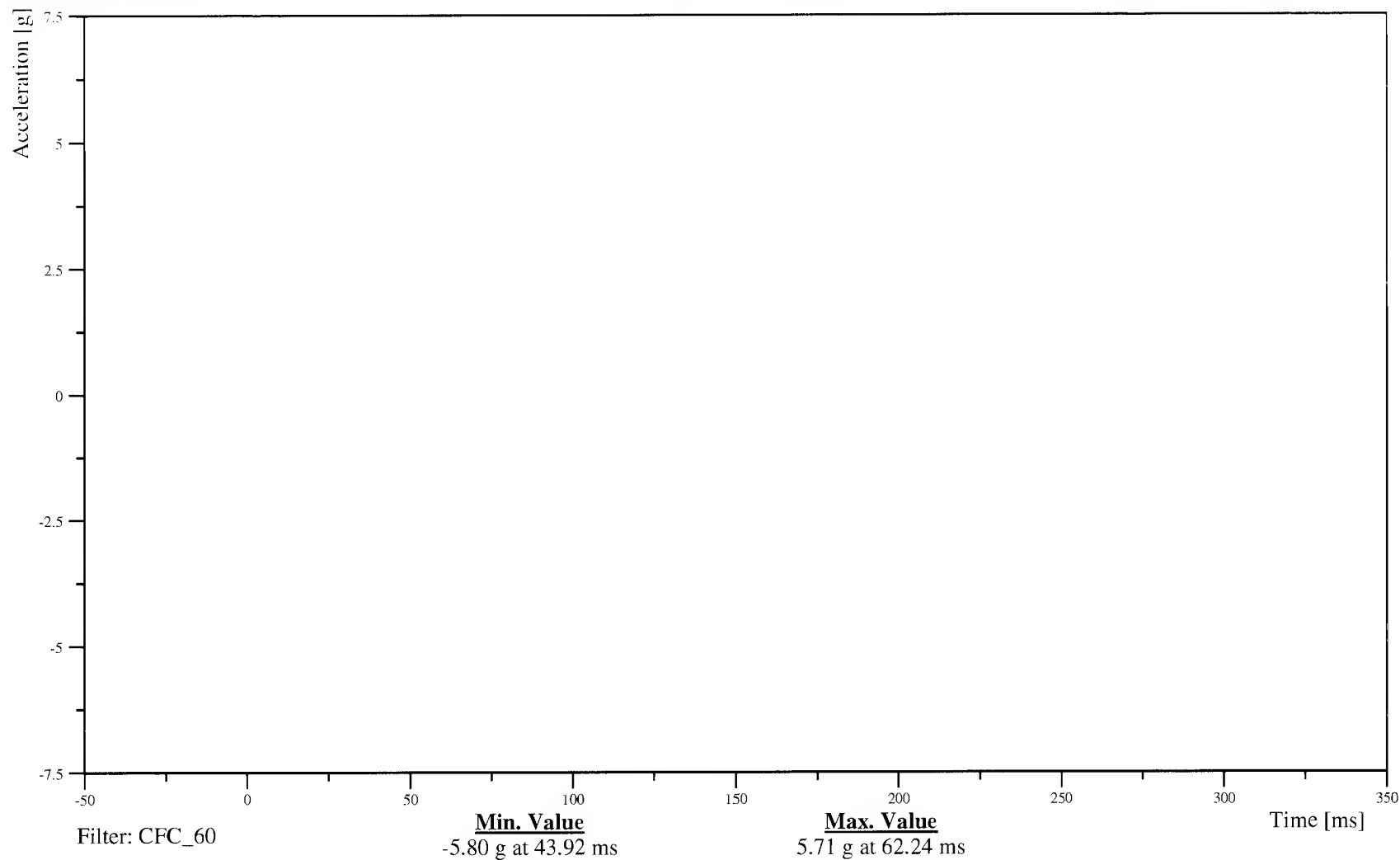
Customer: NHTSA

Test Number: C60106

18FORA000000ACXD

TRC Inc. Test Lab: CTF

Test Number: 060320



B-95

060320

# 56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

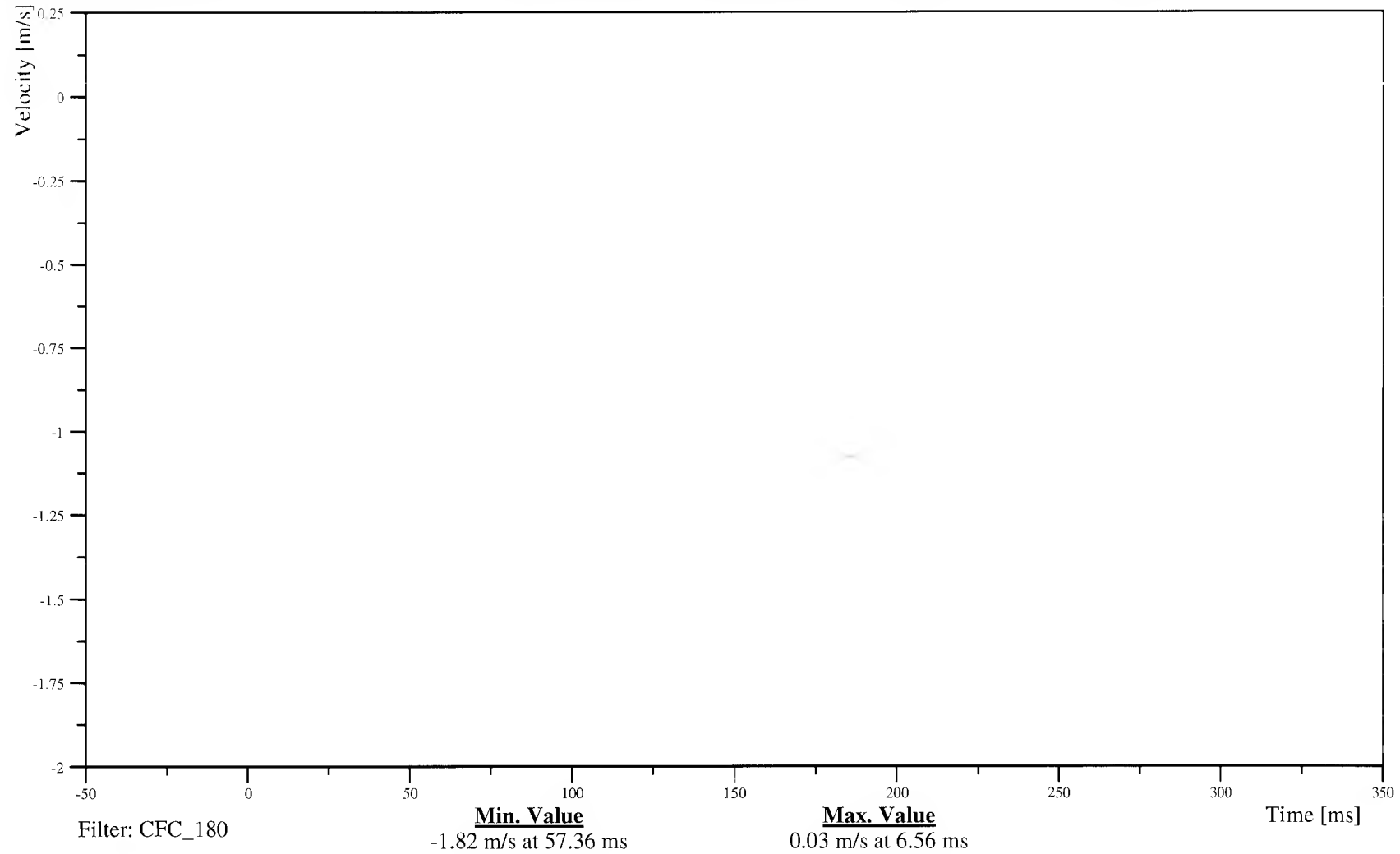
## REAR FLOORPAN ABOVE AXLE X-AXIS VELOCITY

Date: 03/20/2006  
Time: 12:01

Customer: NHTSA  
Test Number: C60106

18FORA000000VEXC

TRC Inc. Test Lab: CTF  
Test Number: 060320



B-96

060320



56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

Date: 03/20/2006

REAR FLOORPAN ABOVE AXLE Y-AXIS ACCELERATION

Time: 12:01

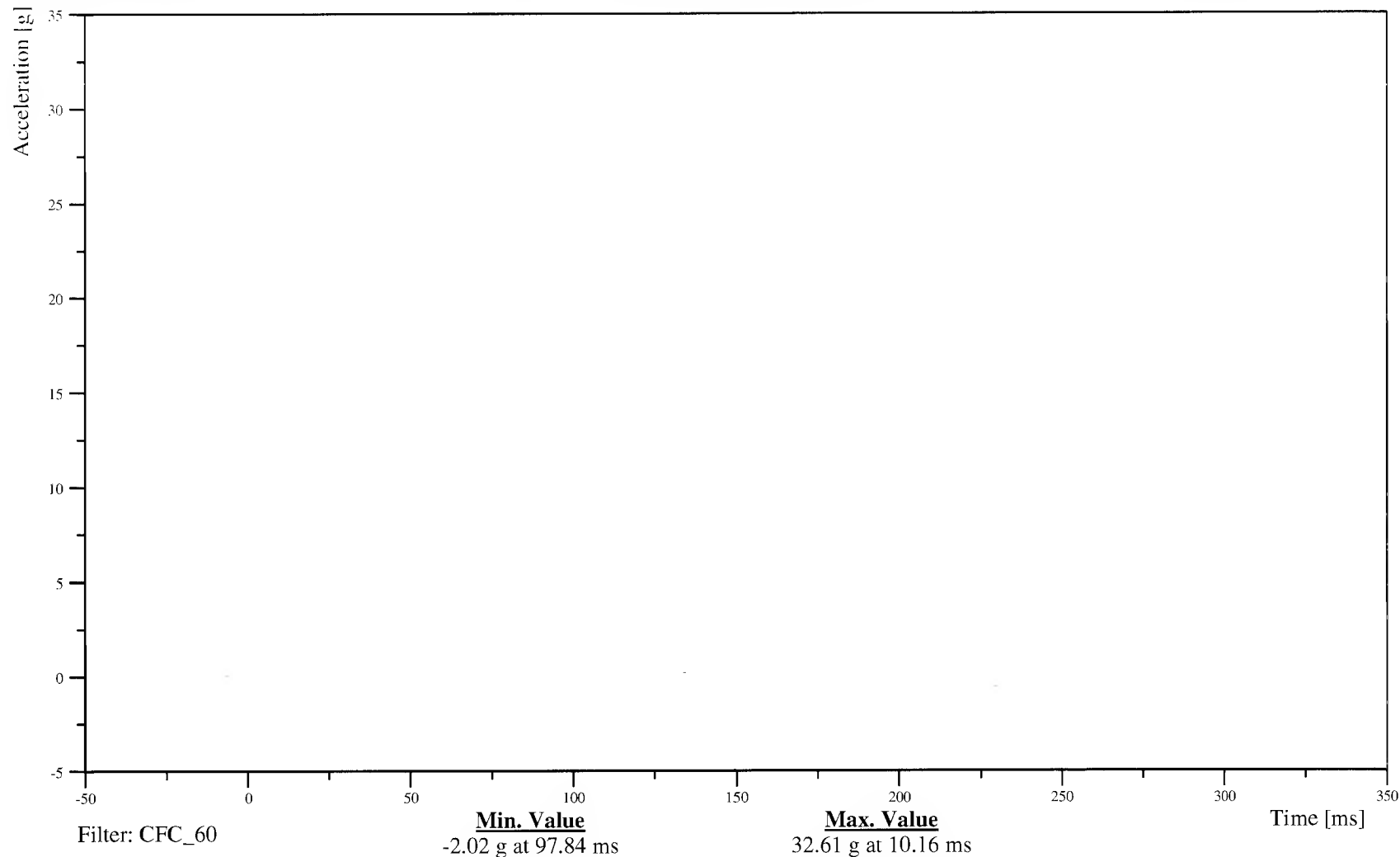
Customer: NHTSA

Test Number: C60106

18FORA000000ACYD

TRC Inc. Test Lab: CTF

Test Number: 060320



B-97

060320

56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

REAR FLOORPAN ABOVE AXLE Y-AXIS VELOCITY

Date: 03/20/2006

Time: 12:01

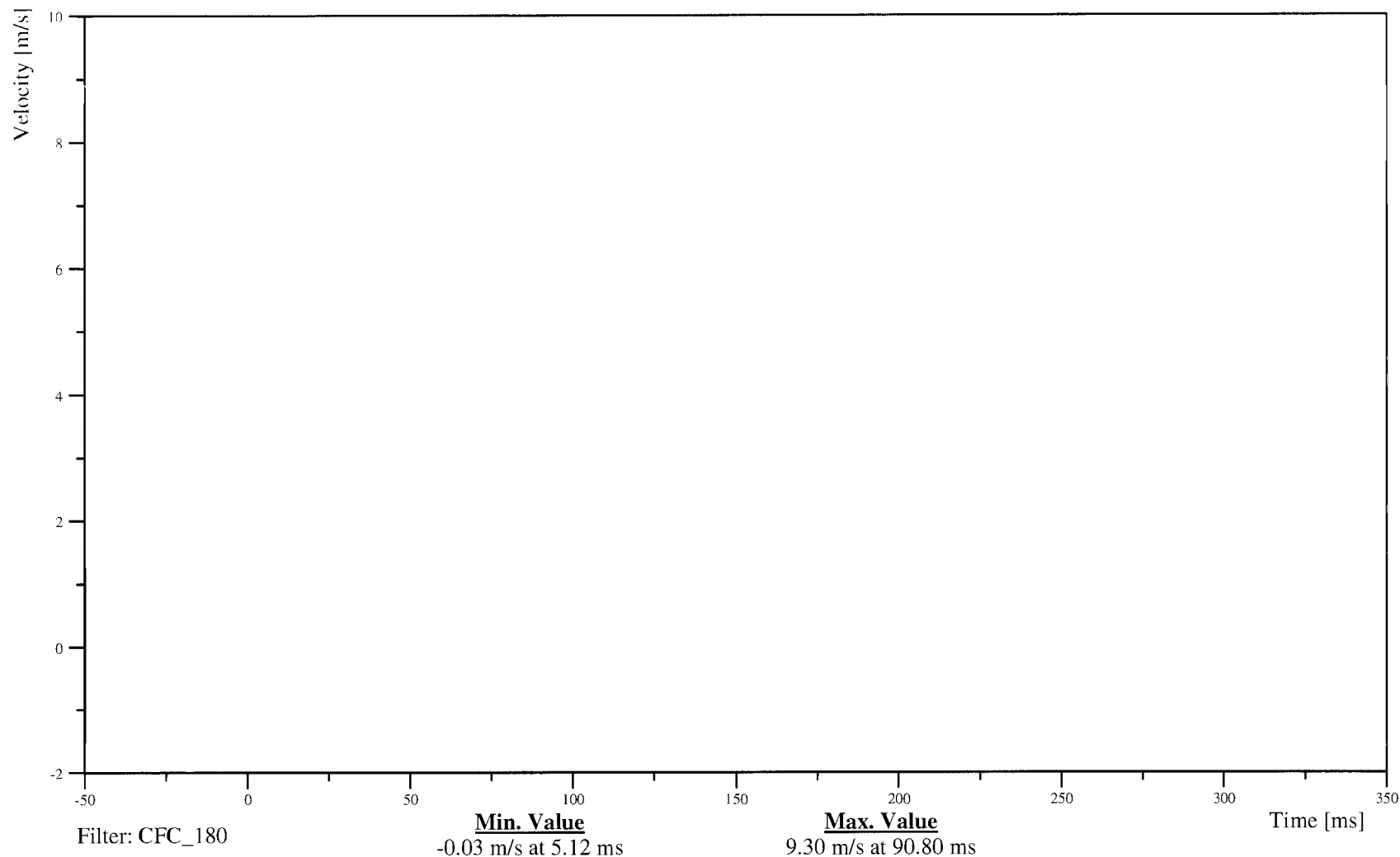
Customer: NHTSA

Test Number: C60106

18FORA000000VEYC

TRC Inc. Test Lab: CTF

Test Number: 060320



B-98

060320

56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

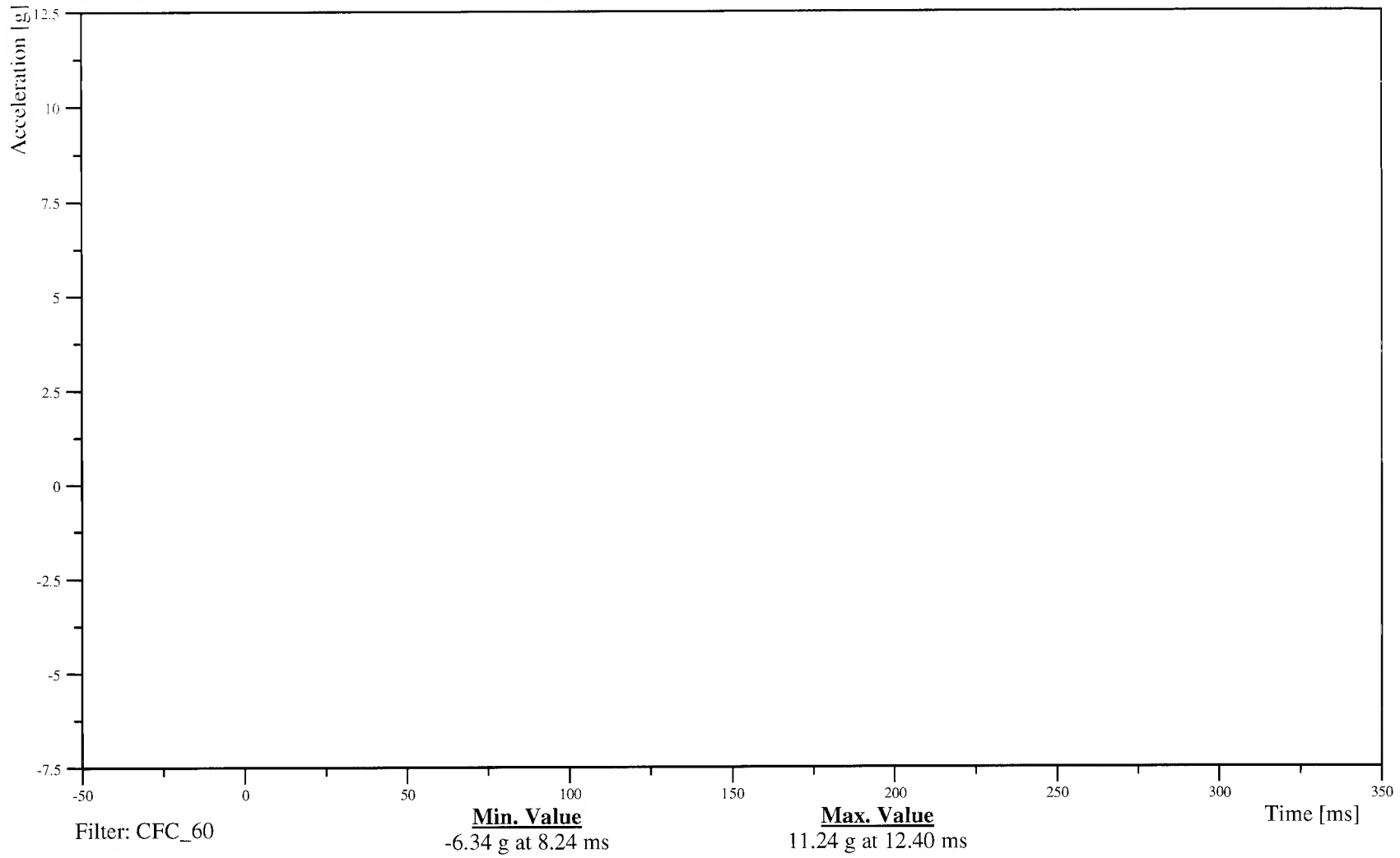
Date: 03/20/2006  
Time: 12:01

REAR FLOORPAN ABOVE AXLE Z-AXIS ACCELERATION

Customer: NHTSA  
Test Number: C60106

18FORA000000ACZD

TRC Inc. Test Lab: CTF  
Test Number: 060320



B-99

060320

56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

Date: 03/20/2006

Time: 12:01

REAR FLOORPAN ABOVE AXLE Z-AXIS VELOCITY

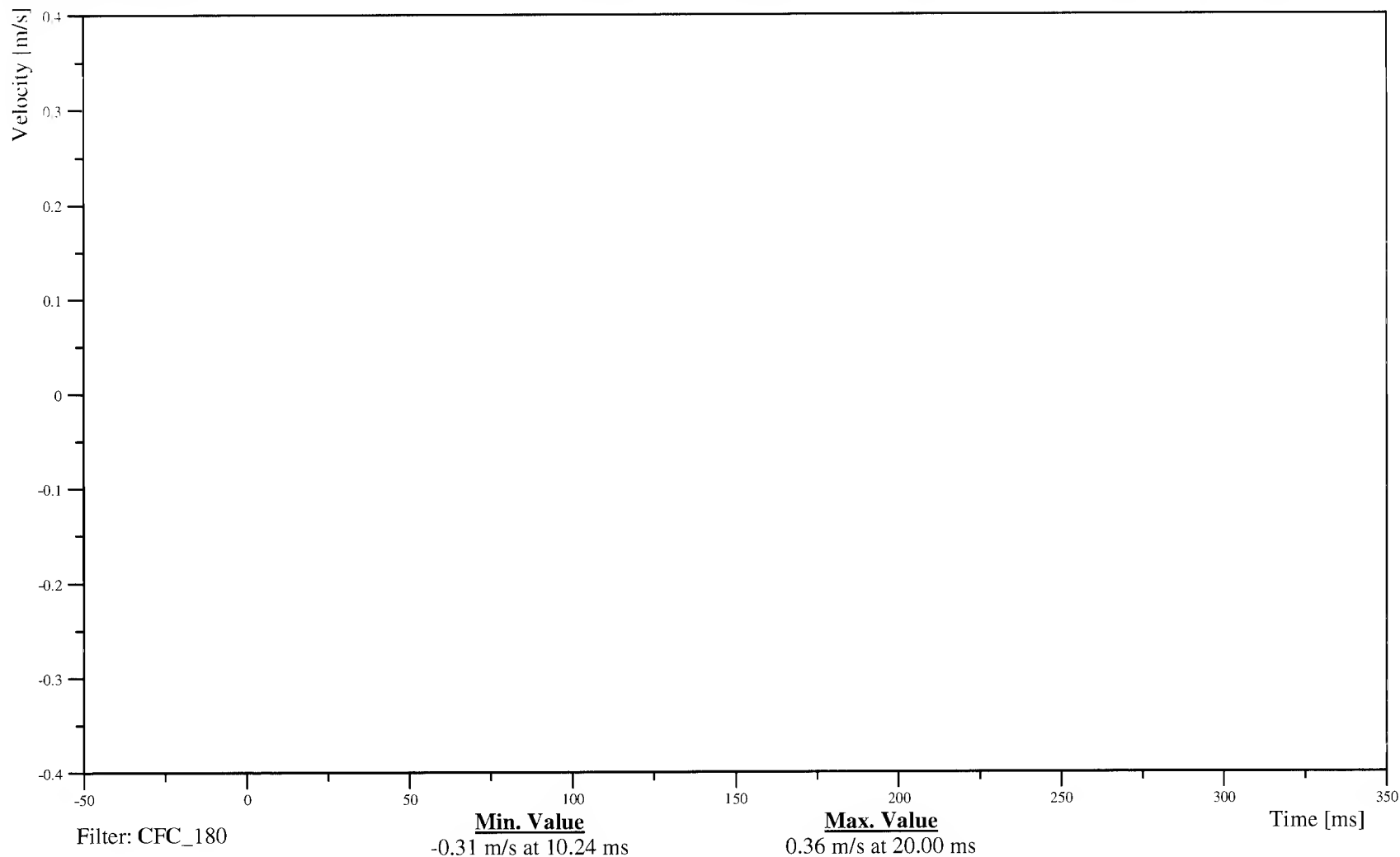
Customer: NHTSA

Test Number: C60106

18FORA000000VEZC

TRC Inc. Test Lab: CTF

Test Number: 060320



B-100

060320

56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

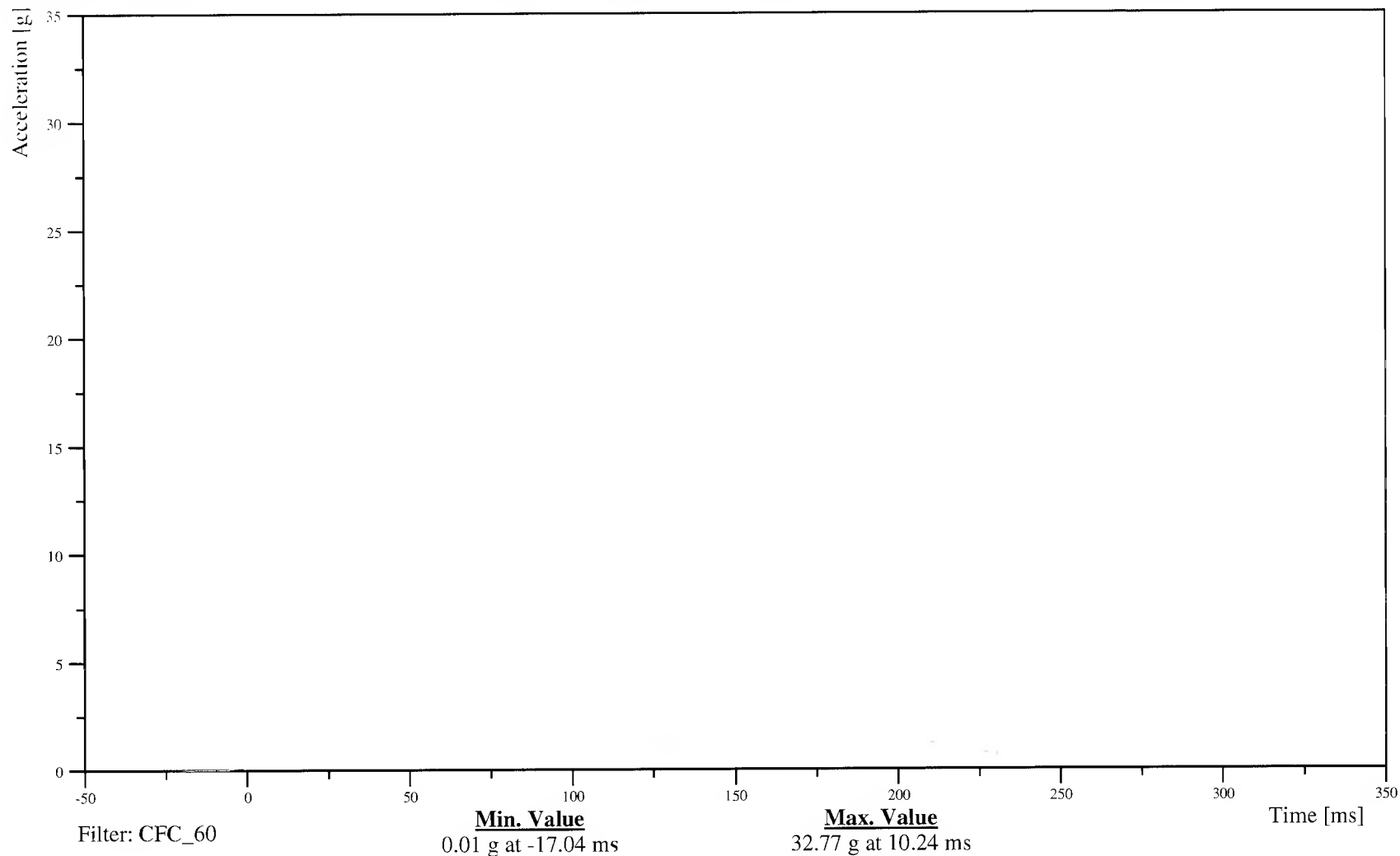
Date: 03/20/2006  
Time: 12:05

REAR FLOORPAN ABOVE AXLE RESULTANT ACCELERATION

Customer: NHTSA  
Test Number: C60106

18FORA000000ACRD

TRC Inc. Test Lab: CTF  
Test Number: 060320



B-101

060320



56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

Date: 03/20/2006

LEFT SIDE SILL AT FRONT SEAT Y-AXIS ACCELERATION

Time: 12:01

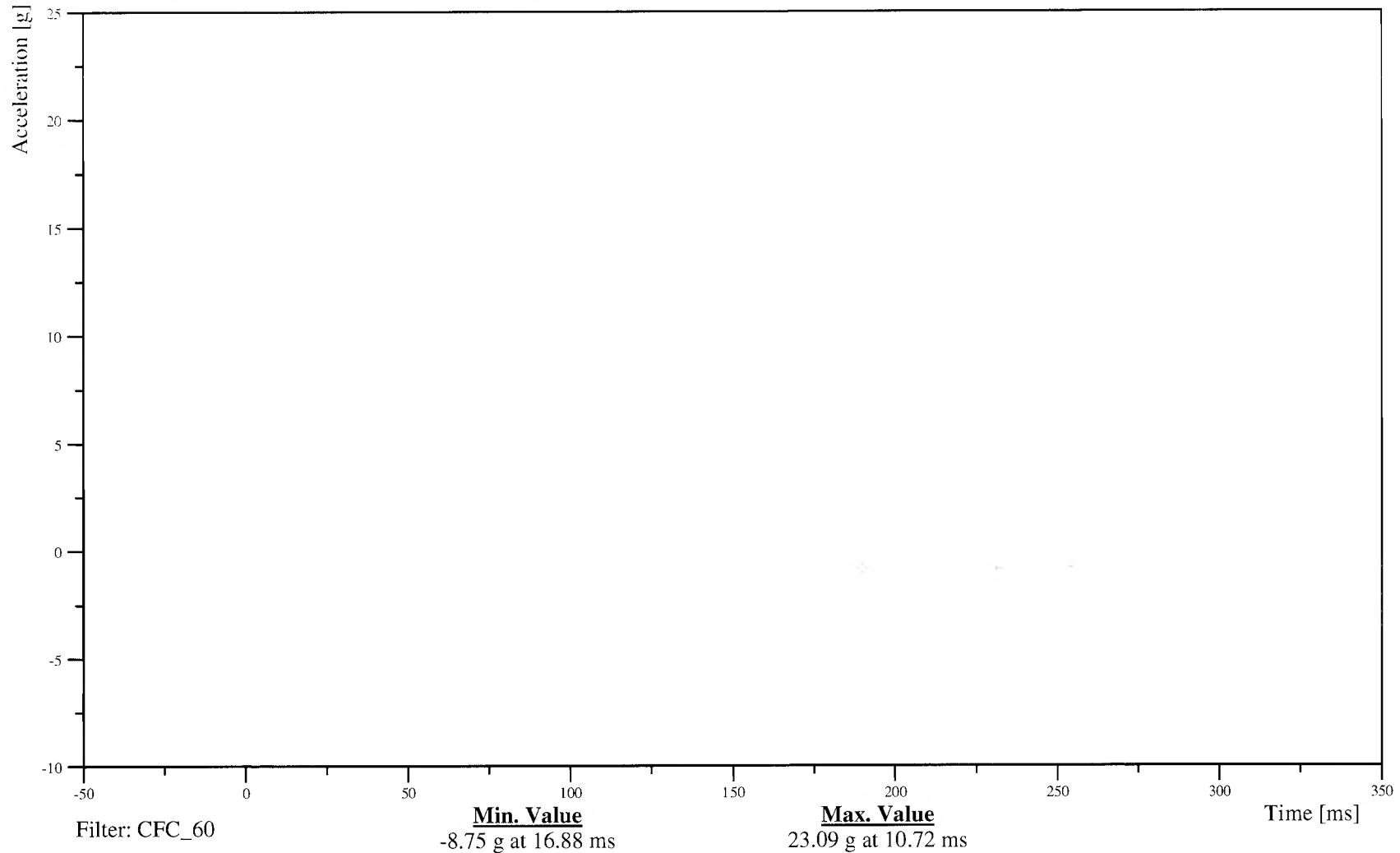
Customer: NHTSA

Test Number: C60106

14SILBFR0000ACYD

TRC Inc. Test Lab: CTF

Test Number: 060320



B-102

060320

56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

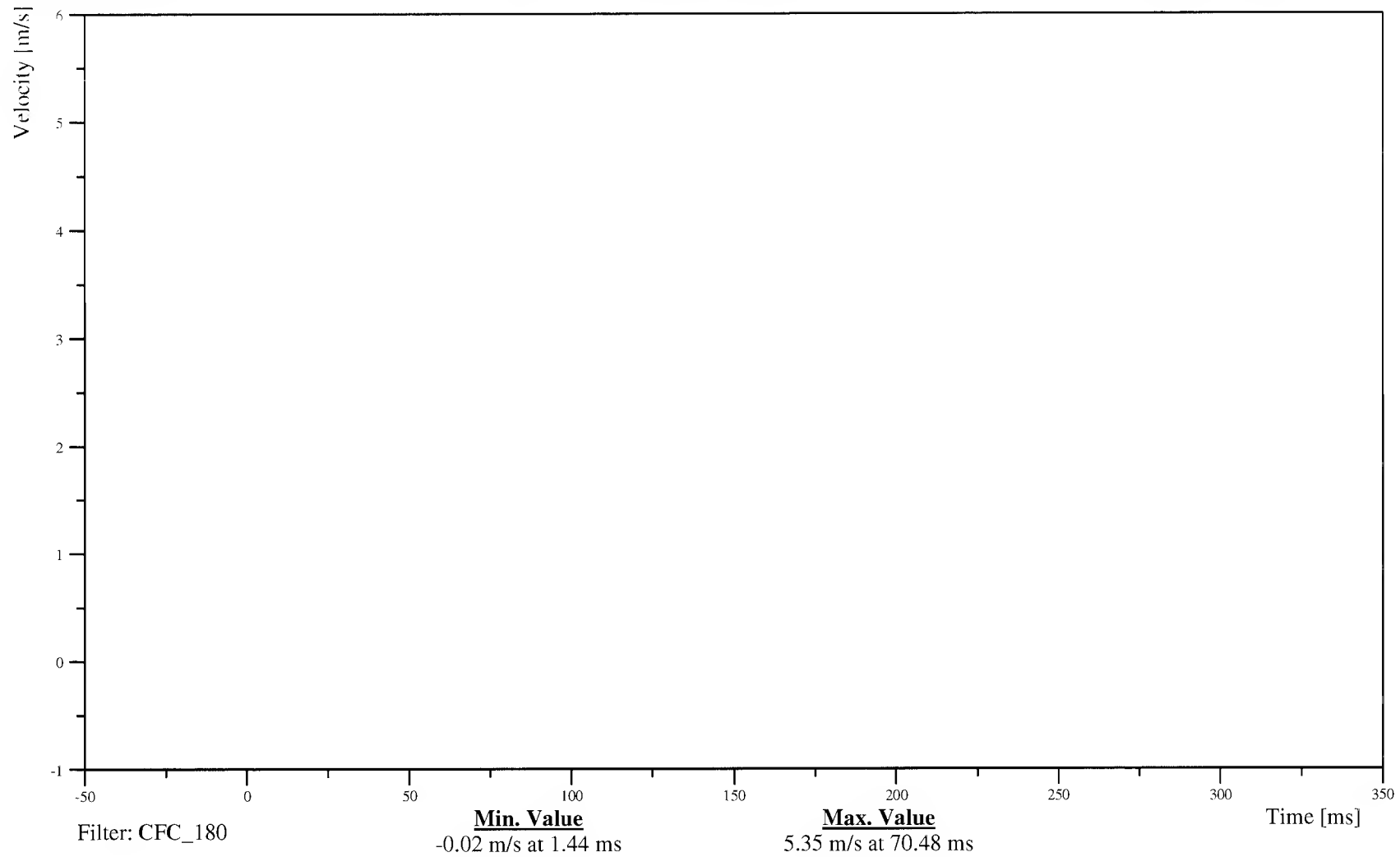
LEFT SIDE SILL AT FRONT SEAT Y-AXIS VELOCITY

Date: 03/20/2006  
Time: 12:01

Customer: NHTSA  
Test Number: C60106

14SILBFR0000VEYC

TRC Inc. Test Lab: CTF  
Test Number: 060320



B-103

060320

56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

Date: 03/20/2006

LEFT SIDE SILL AT FRONT SEAT Y-AXIS DISPLACEMENT

Time: 12:01

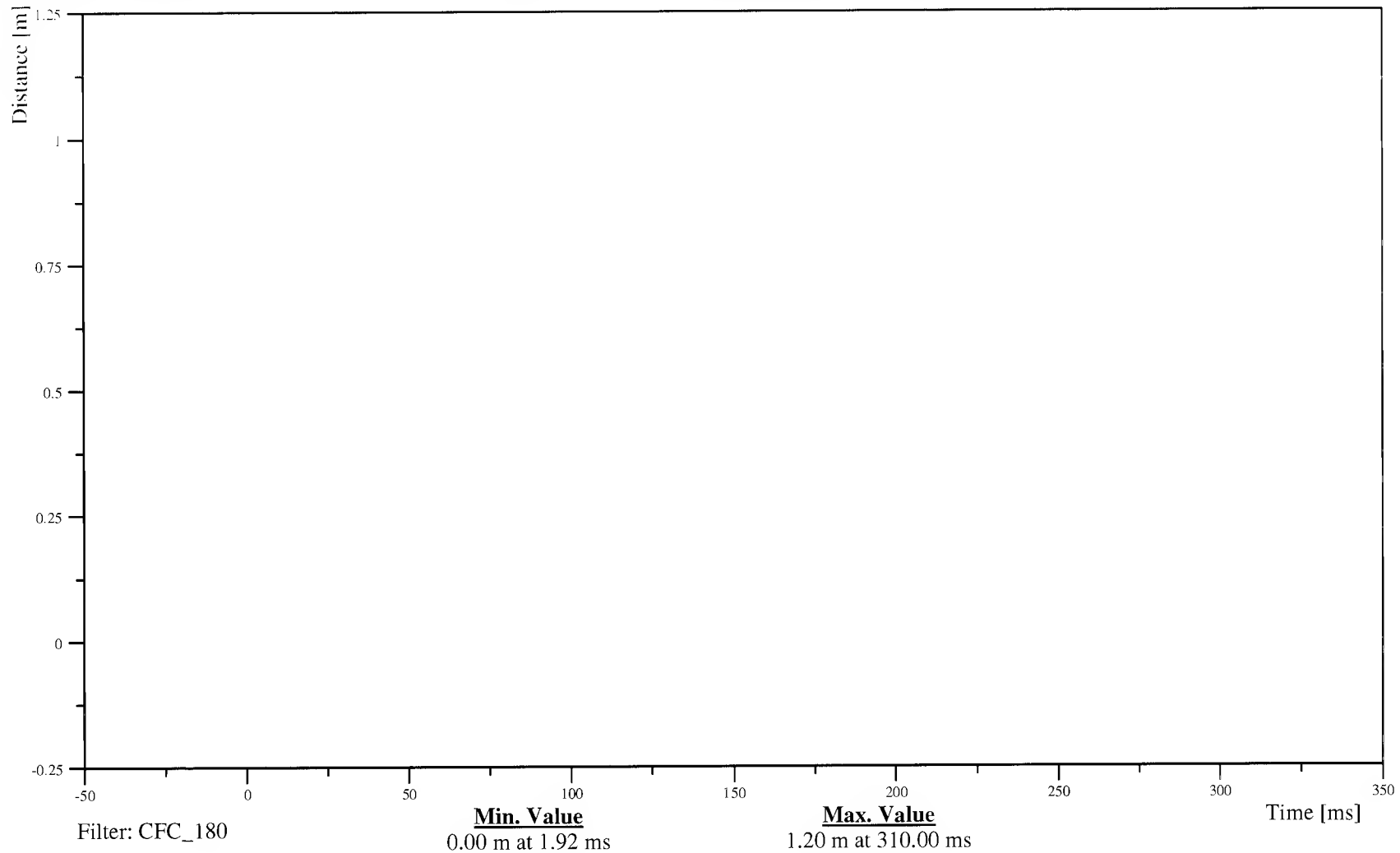
Customer: NHTSA

Test Number: C60106

14SILBFR0000DCYC

TRC Inc. Test Lab: CTF

Test Number: 060320



B-104

060320

56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

Date: 03/20/2006

LEFT SIDE SILL AT REAR SEAT Y-AXIS ACCELERATION

Time: 12:01

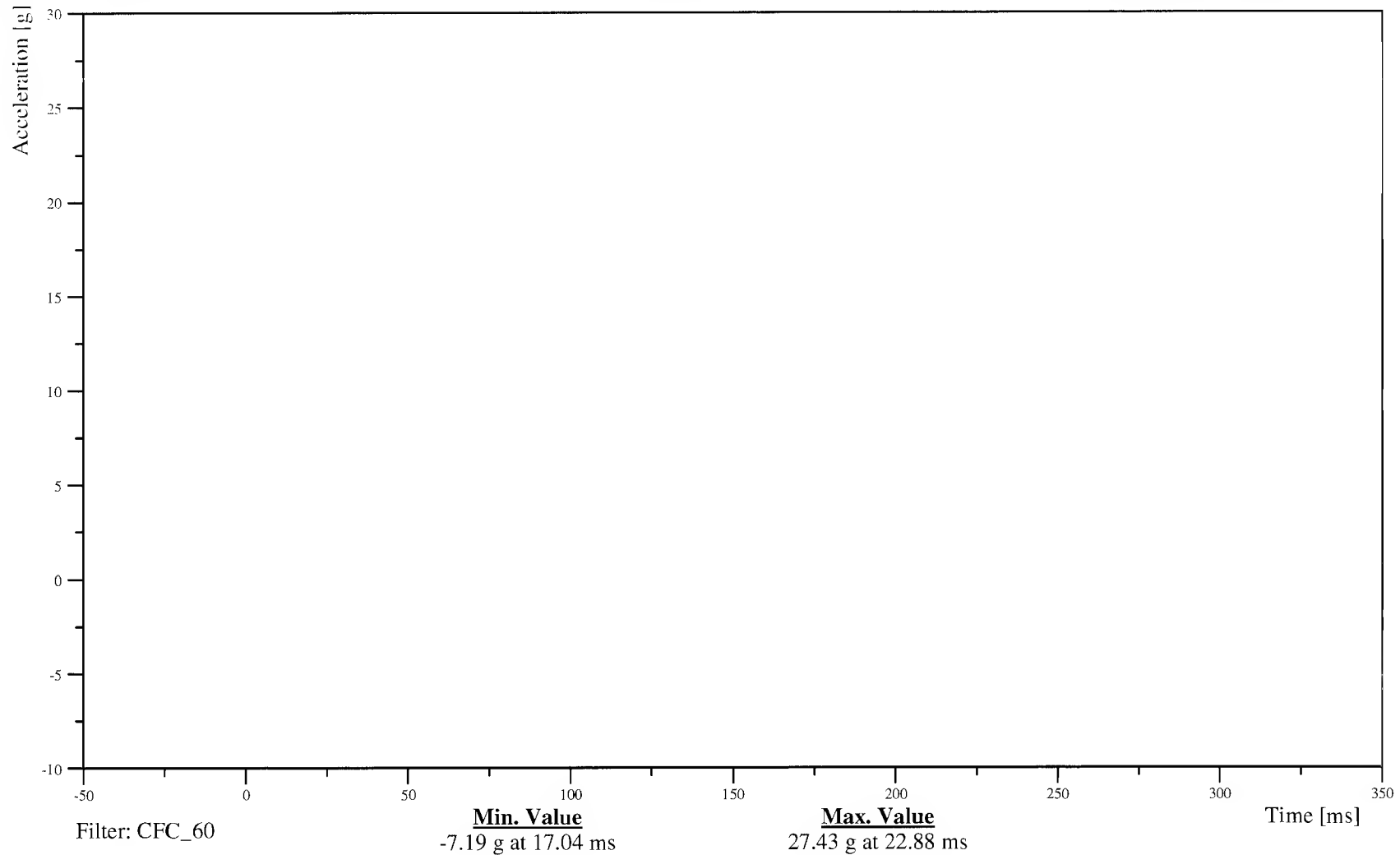
Customer: NHTSA

Test Number: C60106

14SILBRE0000ACYD

TRC Inc. Test Lab: CTF

Test Number: 060320



B-105

060320

56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

Date: 03/20/2006

Time: 12:01

LEFT SIDE SILL AT REAR SEAT Y-AXIS VELOCITY

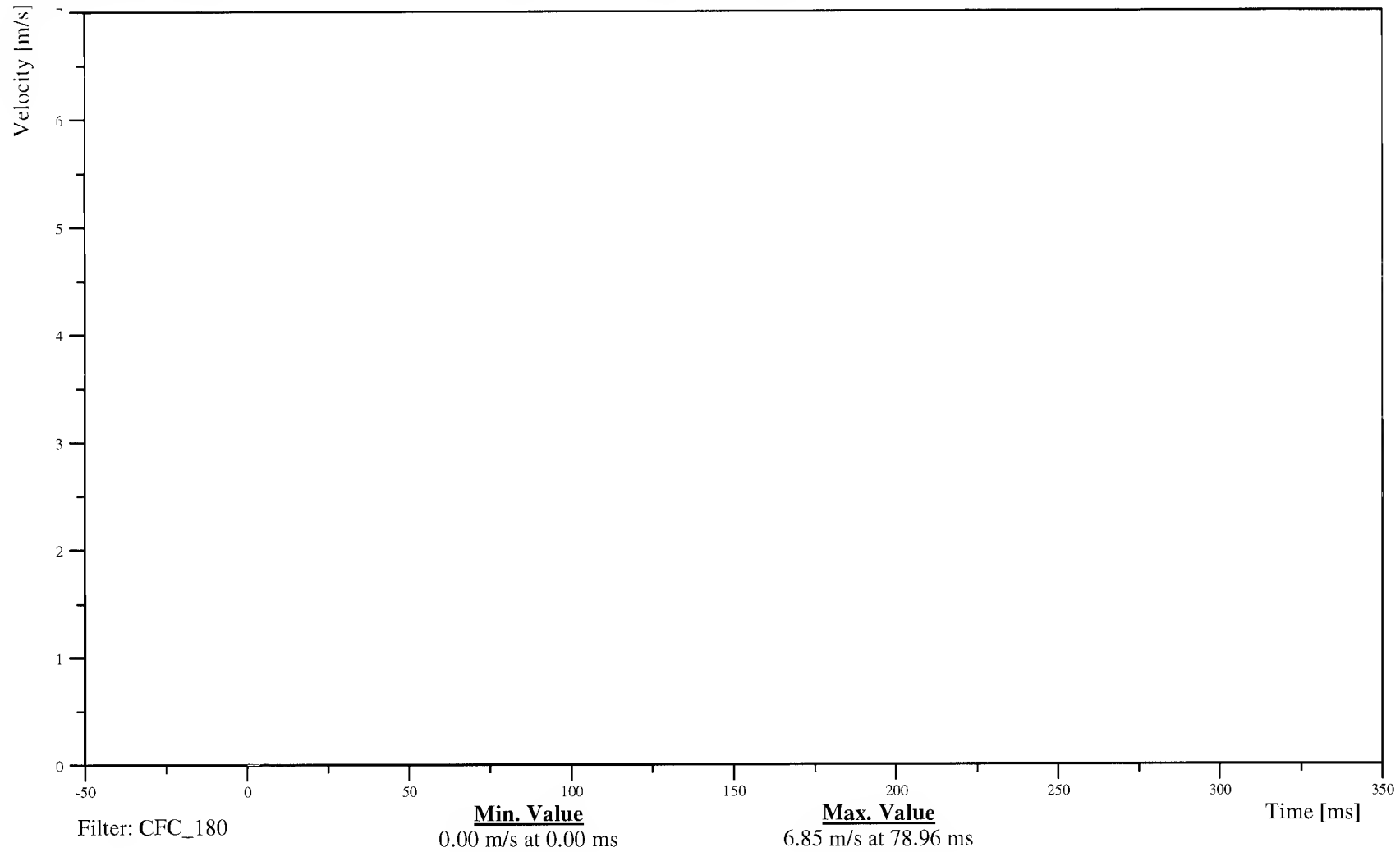
Customer: NHTSA

Test Number: C60106

14SILBRE0000VEYC

TRC Inc. Test Lab: CTF

Test Number: 060320



B-106

060320



56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

Date: 03/20/2006

LEFT SIDE SILL AT REAR SEAT Y-AXIS DISPLACEMENT

Time: 12:01

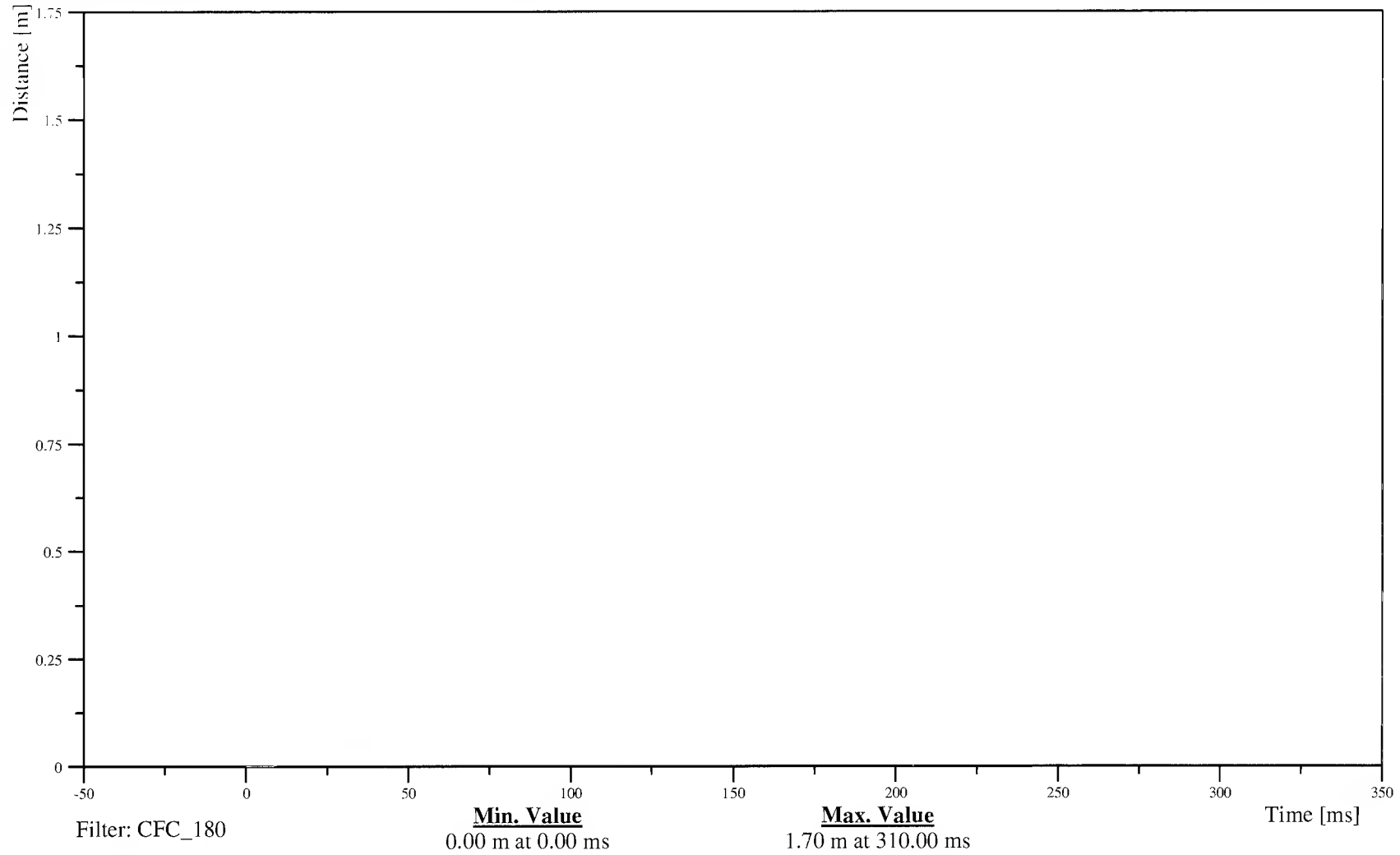
Customer: NHTSA

Test Number: C60106

14SILBRE0000DCYC

TRC Inc. Test Lab: CTF

Test Number: 060320



B-107

060320

56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

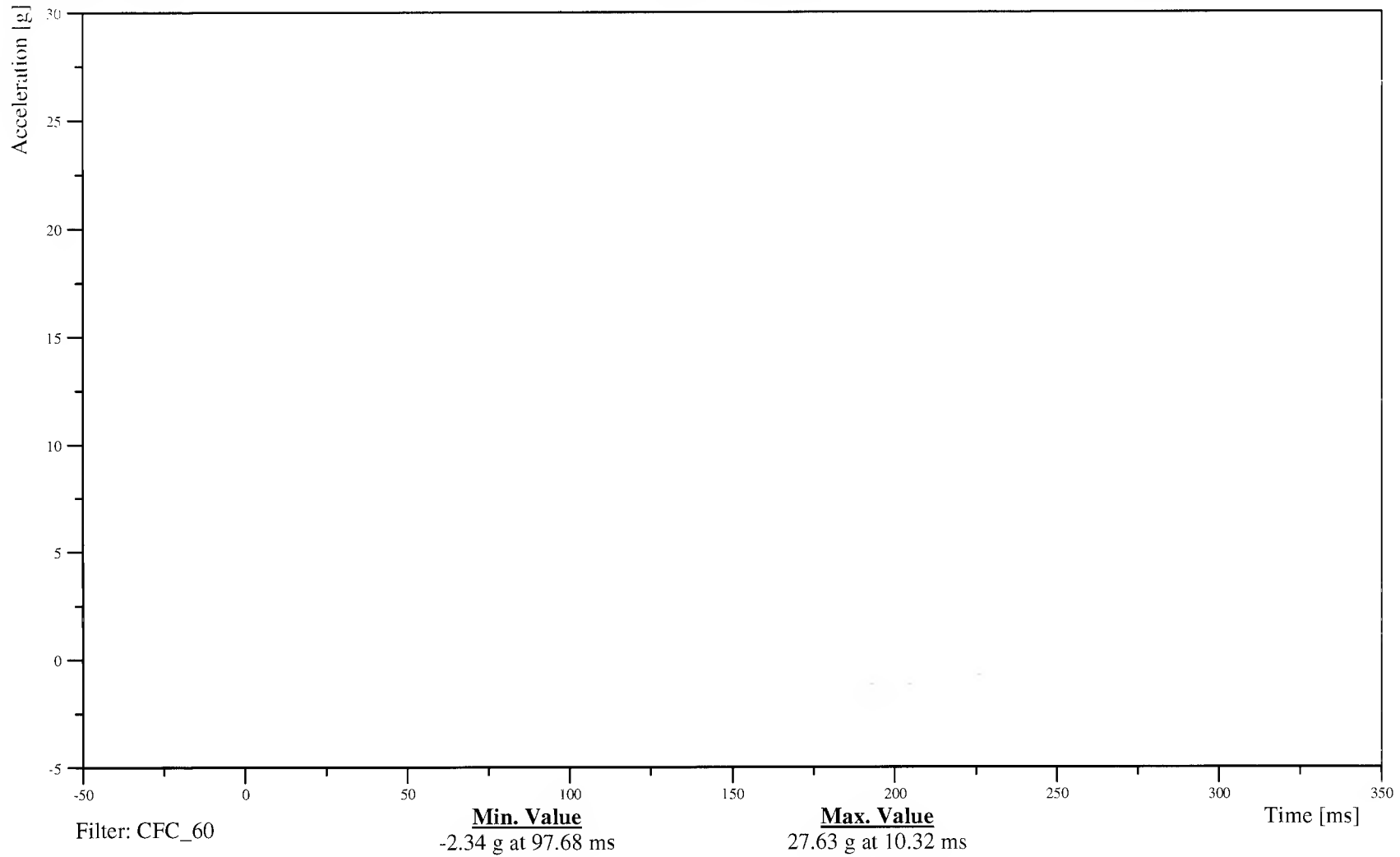
RIGHT REAR OCCUPANT COMPARTMENT Y-AXIS ACCELERATION

Date: 03/20/2006  
Time: 12:01

Customer: NHTSA  
Test Number: C60106

16VEHCRE0000ACYD

TRC Inc. Test Lab: CTF  
Test Number: 060320



B-108

060320

56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

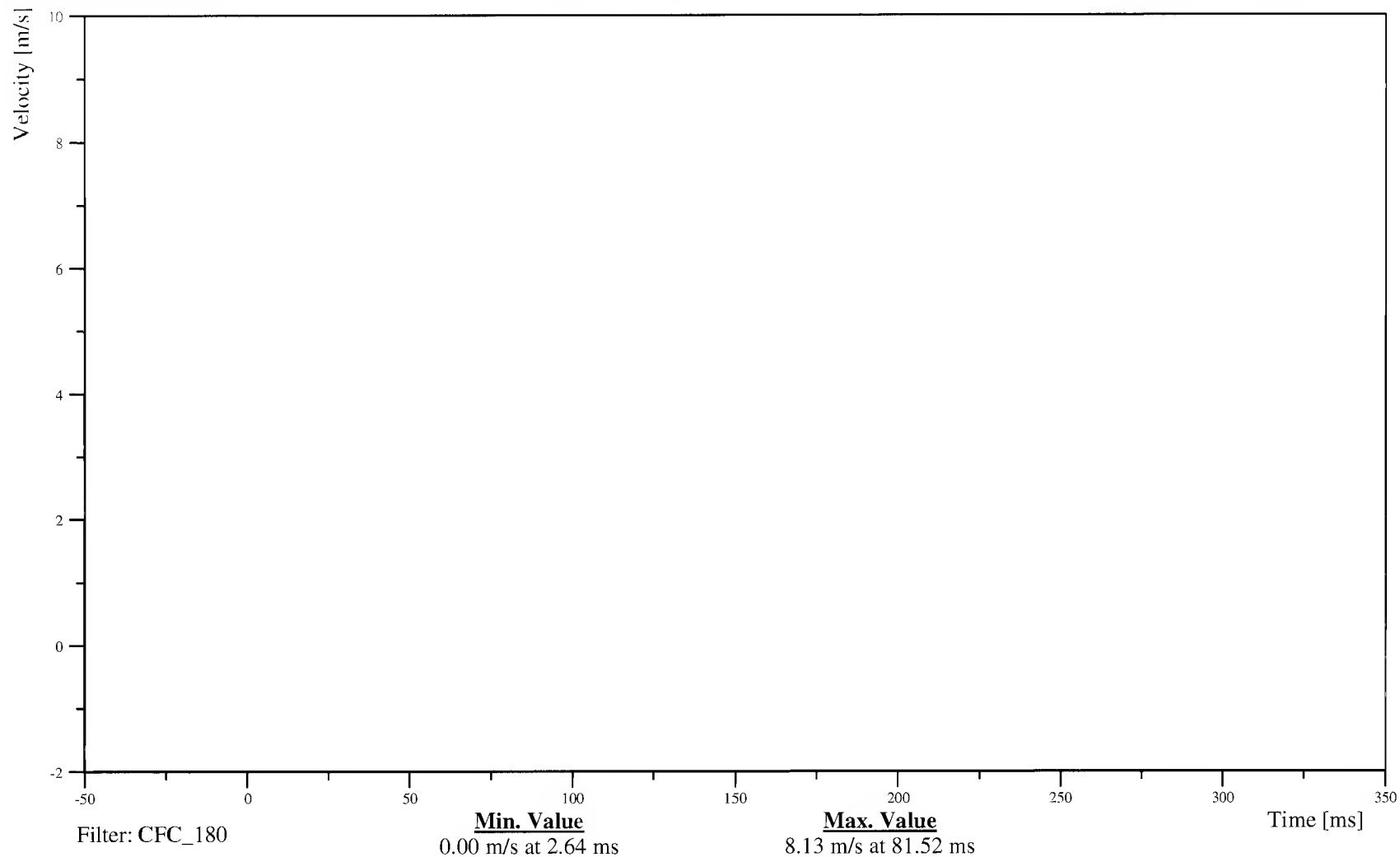
RIGHT REAR OCCUPANT COMPARTMENT Y-AXIS VELOCITY

Date: 03/20/2006  
Time: 12:01

Customer: NHTSA  
Test Number: C60106

16VEHCRE0000VEYC

TRC Inc. Test Lab: CTF  
Test Number: 060320



B-109

060320

56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

Date: 03/20/2006

RIGHT REAR OCCUPANT COMPARTMENT Y-AXIS DISPLACEMENT

Time: 12:01

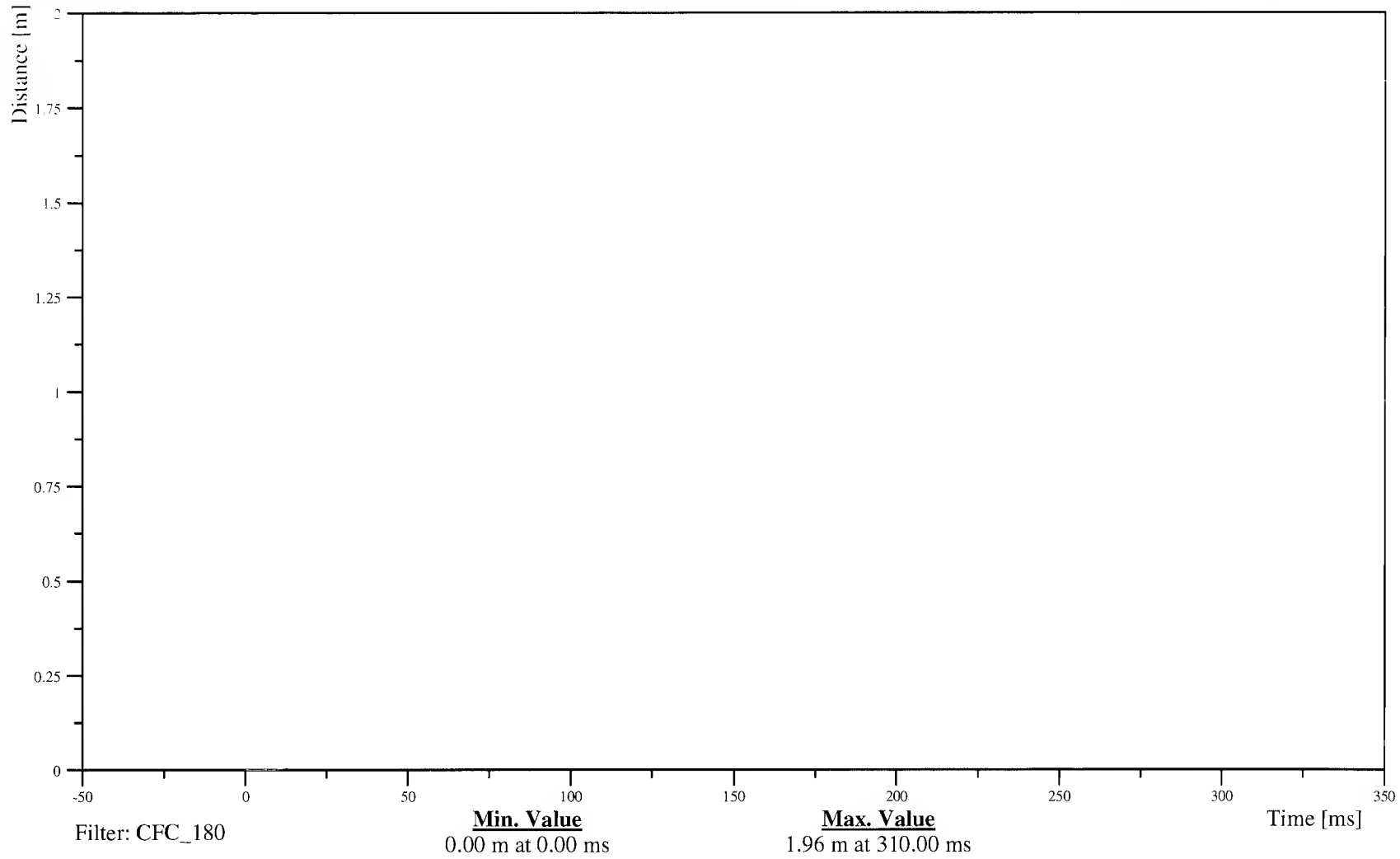
Customer: NHTSA

Test Number: C60106

16VEHCRE0000DCYC

TRC Inc. Test Lab: CTF

Test Number: 060320



B-110

060320

56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

Date: 03/20/2006

Time: 12:01

LEFT LOWER A-POST Y-AXIS ACCELERATION

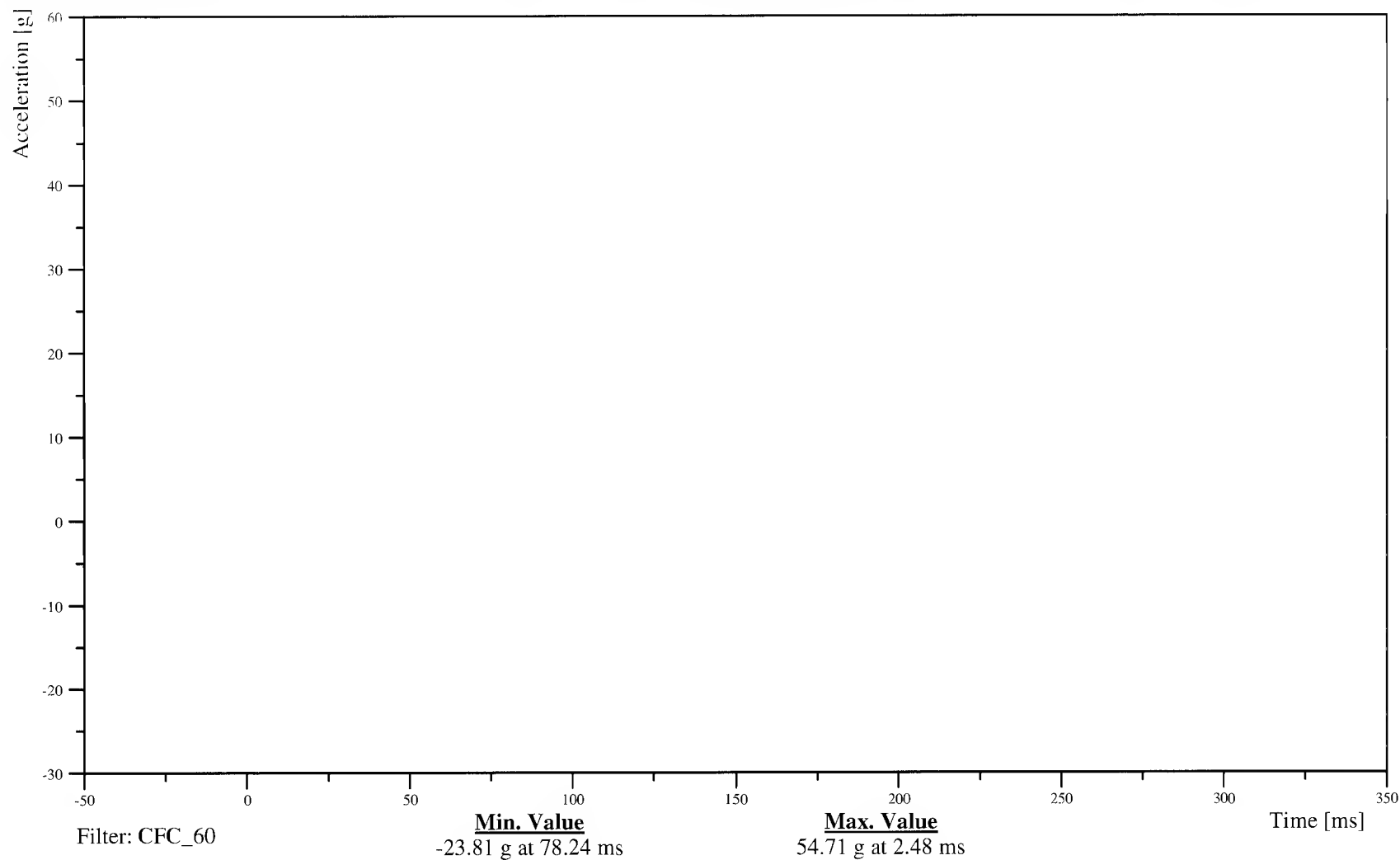
Customer: NHTSA

Test Number: C60106

11APILLO00000ACYD

TRC Inc. Test Lab: CTF

Test Number: 060320



B-111

060320



# 56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

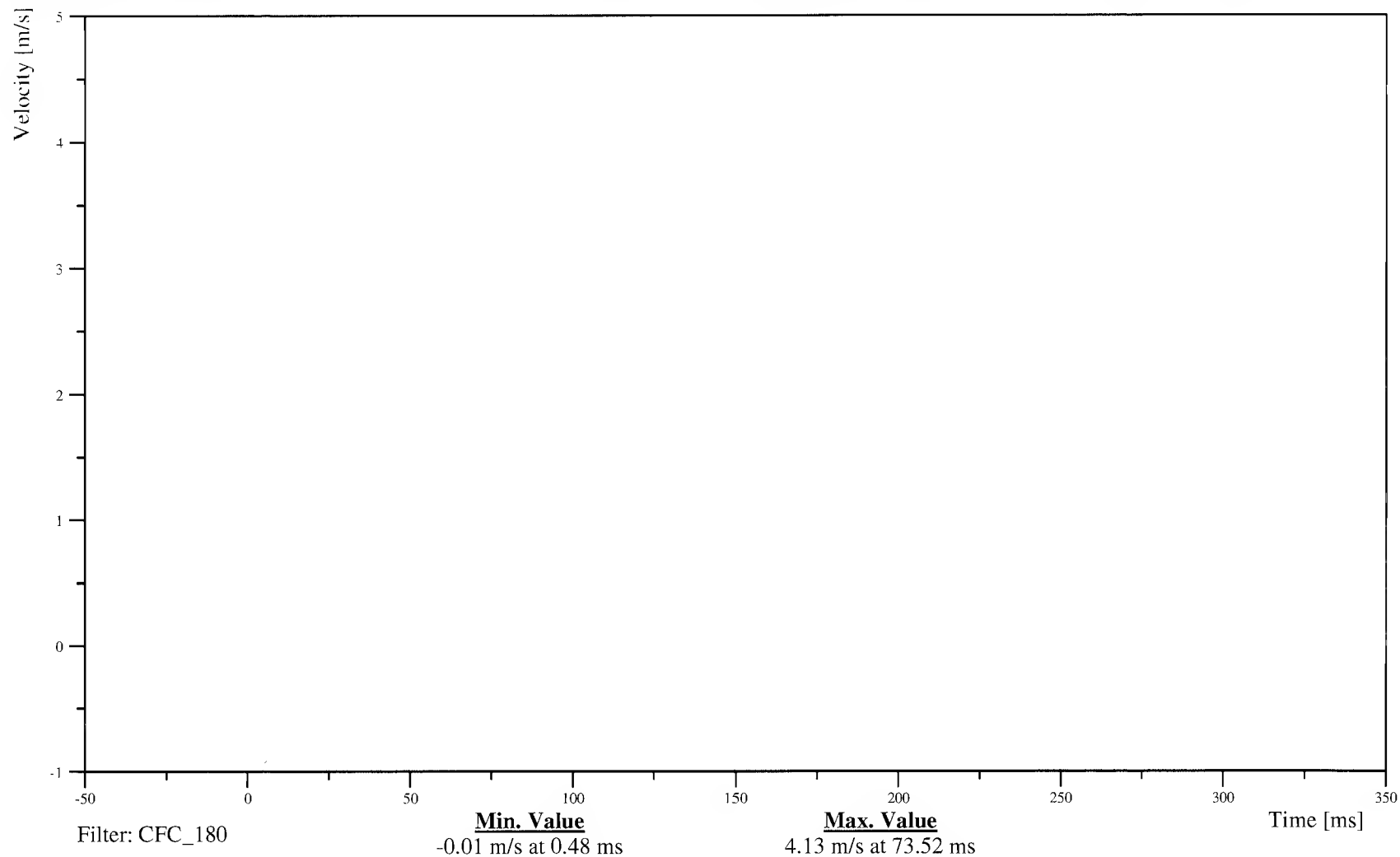
## LEFT LOWER A-POST Y-AXIS VELOCITY

Date: 03/20/2006  
Time: 12:41

Customer: NHTSA  
Test Number: C60106

11APILO0000VEYC

TRC Inc. Test Lab: CTF  
Test Number: 060320



B-112

060320

# 56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

Date: 03/20/2006

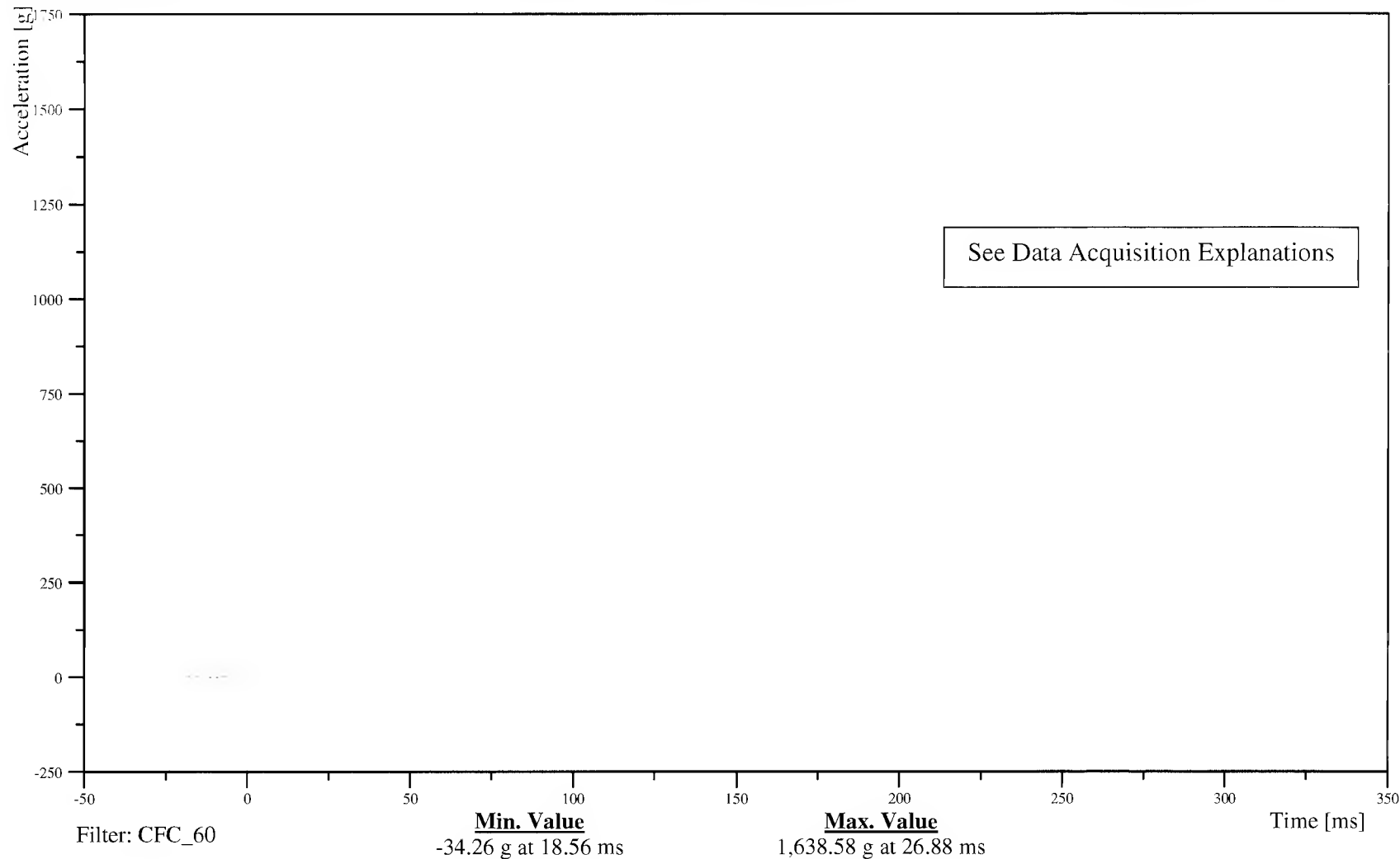
## LEFT MIDDLE A-POST Y-AXIS ACCELERATION

Time: 12:01

Customer: NHTSA  
Test Number: C60106

11APILMI0000ACYD

TRC Inc. Test Lab: CTF  
Test Number: 060320



B-113

060320

# 56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

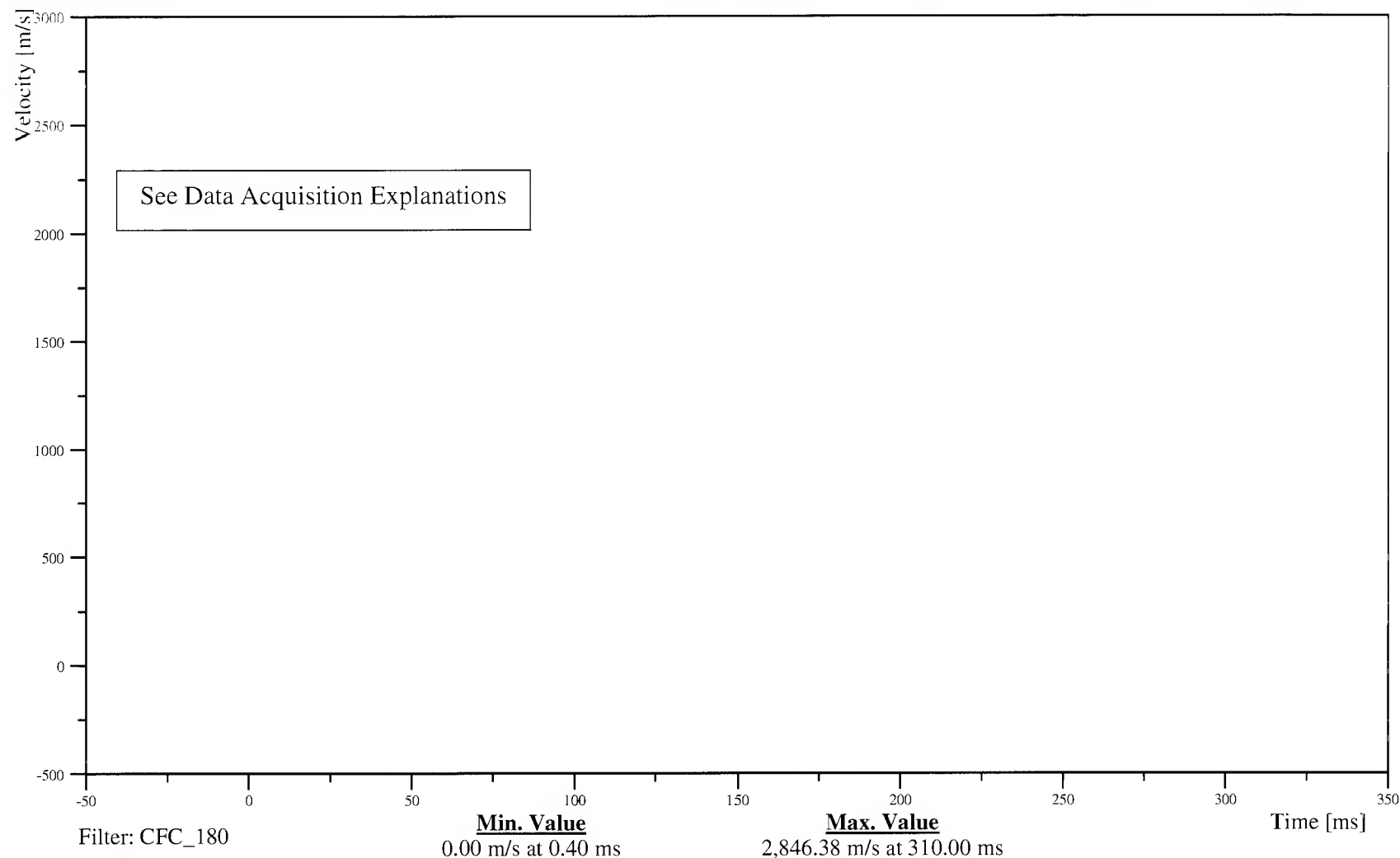
## LEFT MIDDLE A-POST Y-AXIS VELOCITY

Date: 03/20/2006  
Time: 12:01

Customer: NHTSA  
Test Number: C60106

11APILMI0000VEYC

TRC Inc. Test Lab: CTF  
Test Number: 060320



B-114

060320

56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

Date: 03/20/2006

LEFT LOWER B-POST Y-AXIS ACCELERATION

Time: 12:01

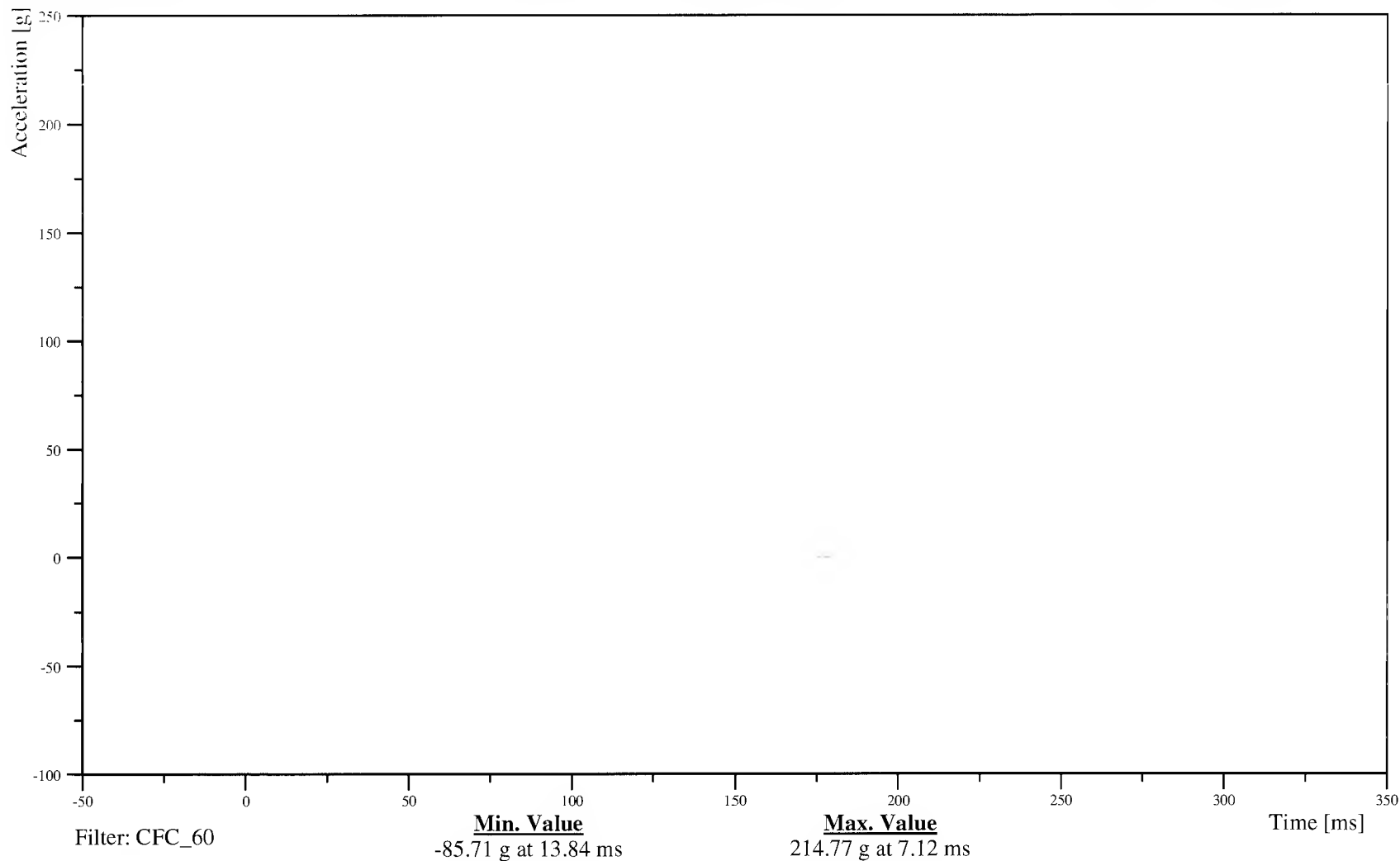
Customer: NHTSA

Test Number: C60106

14BPILLO00000ACYD

TRC Inc. Test Lab: CTF

Test Number: 060320



B-115

060320

56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

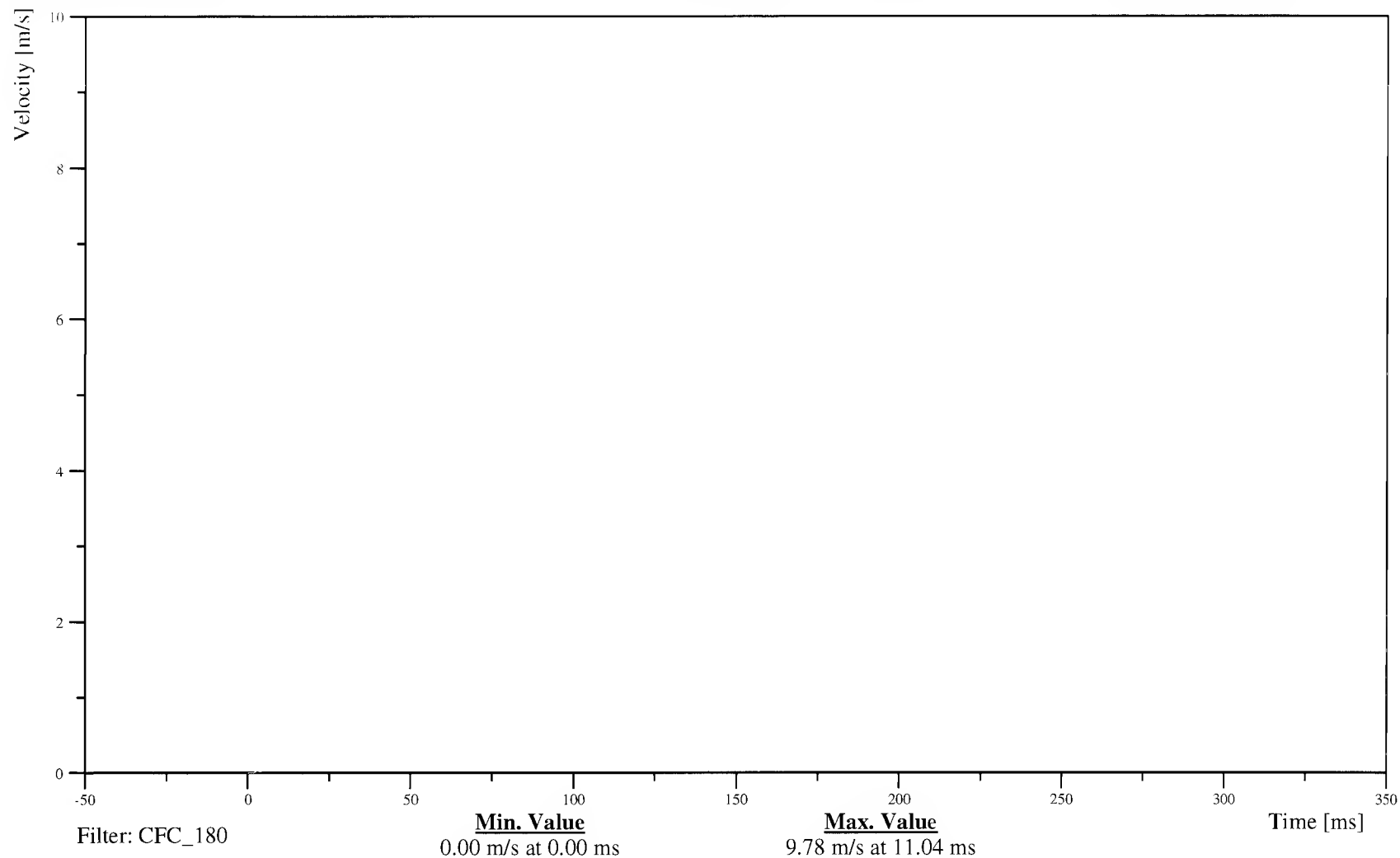
LEFT LOWER B-POST Y-AXIS VELOCITY

Date: 03/20/2006  
Time: 12:01

Customer: NHTSA  
Test Number: C60106

14BPILLO0000VEYC

TRC Inc. Test Lab: CTF  
Test Number: 060320



B-116

060320



56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

Date: 03/29/2006

LEFT MIDDLE B-POST Y-AXIS ACCELERATION

Time: 12:01

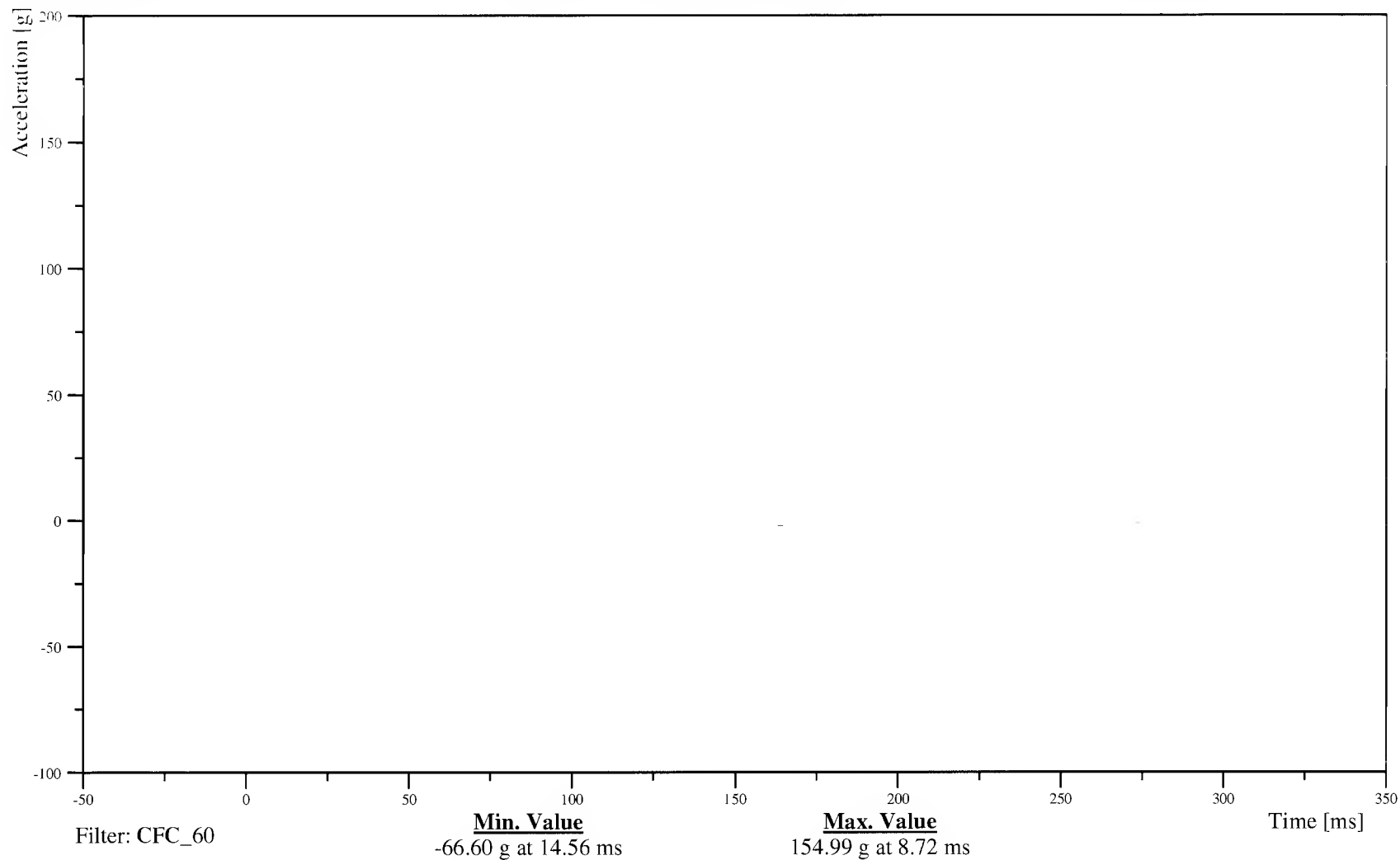
Customer: NHTSA

Test Number: C60106

14BPILMI0000ACYD

TRC Inc. Test Lab: CTF

Test Number: 060320



B-117

060320

# 56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

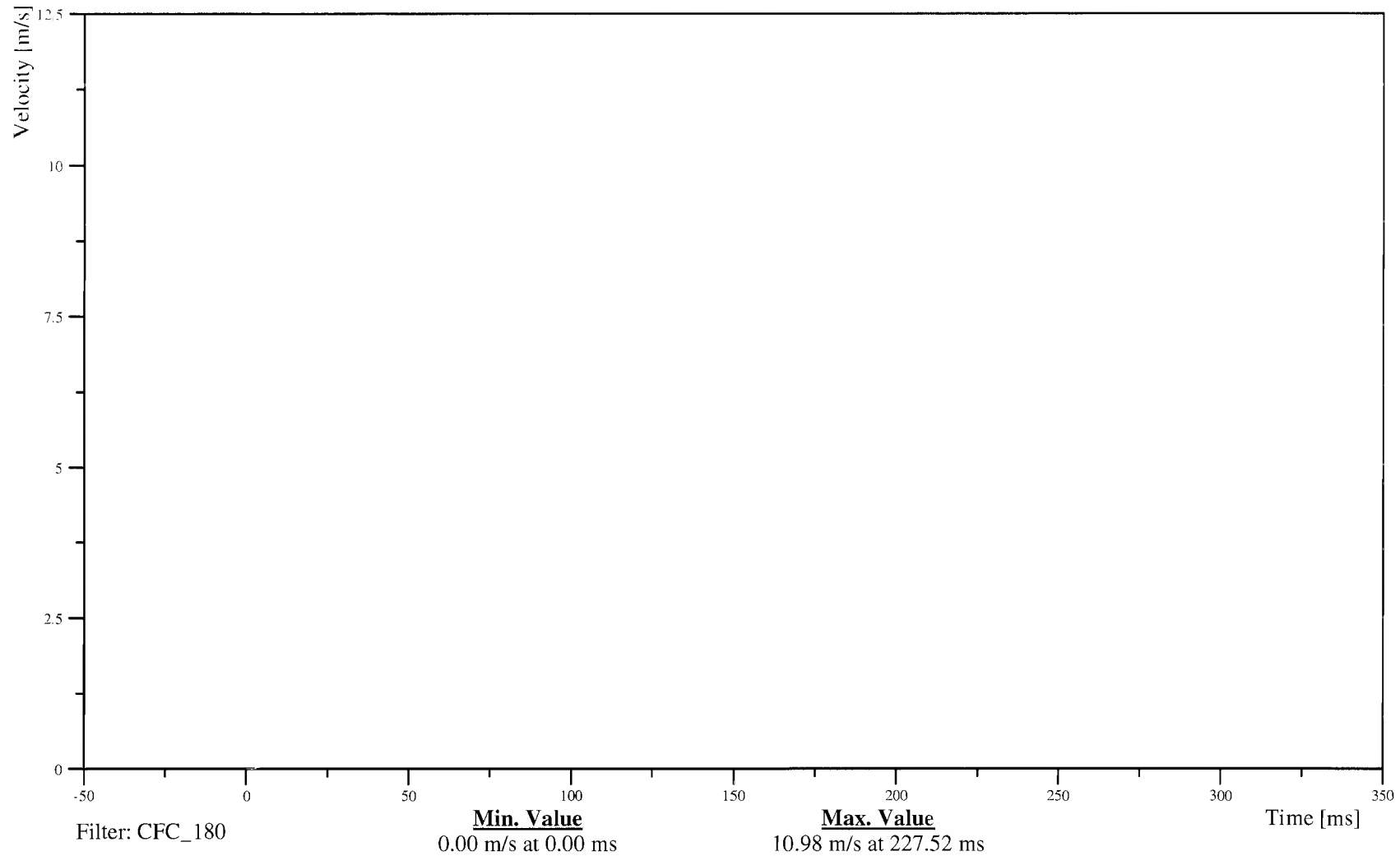
## LEFT MIDDLE B-POST Y-AXIS VELOCITY

Date: 03/20/2006  
Time: 12:01

Customer: NHTSA  
Test Number: C60106

14BPILMI0000VEYC

TRC Inc. Test Lab: CTF  
Test Number: 060320



B-118

060320



56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

Date: 03/20/2006

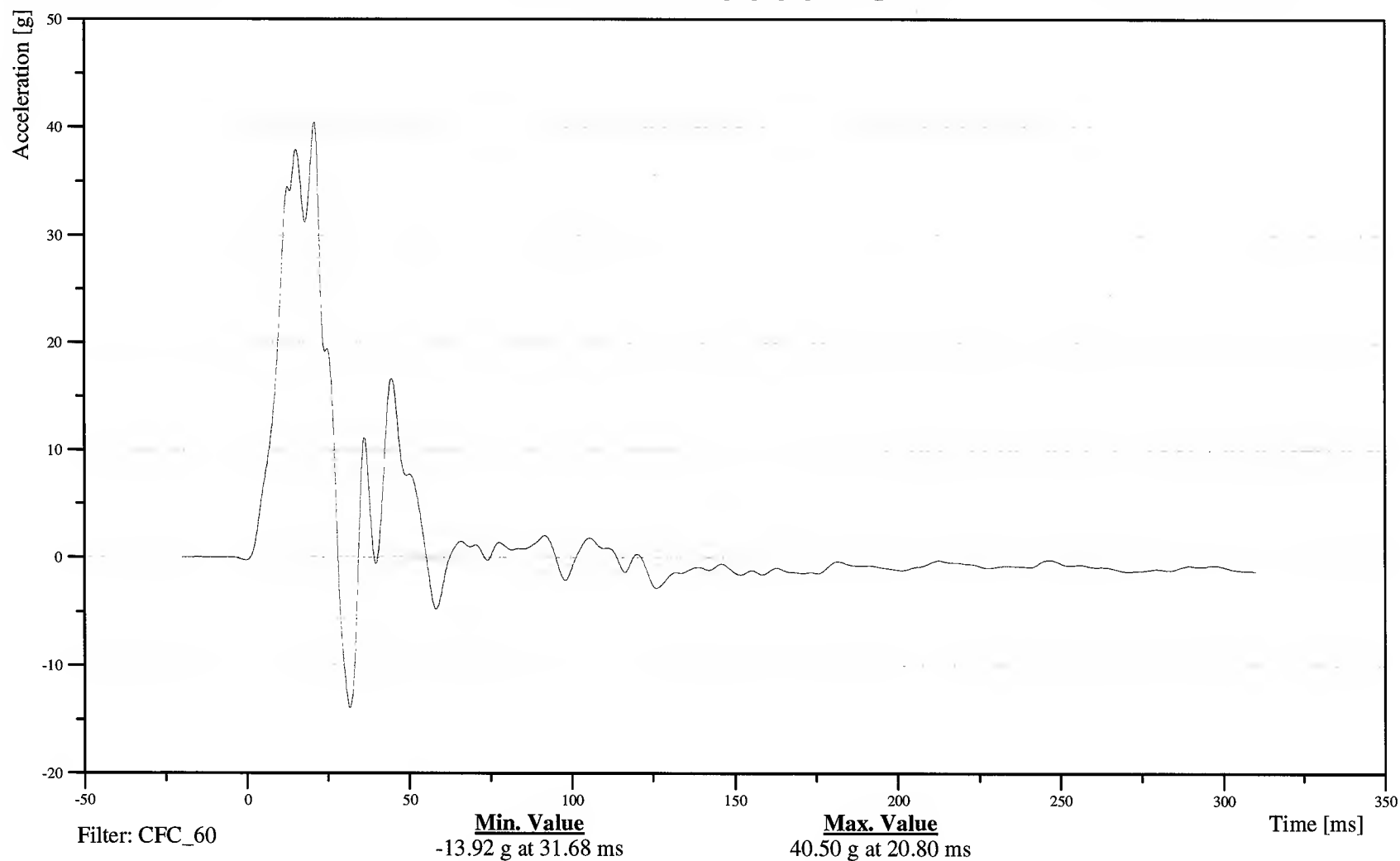
Time: 12:01

# LEFT FRONT SEAT TRACK Y-AXIS ACCELERATION

Customer: NHTSA  
Test Number: C60106

11SETRFR0000ACYD

TRC Inc. Test Lab: CTF  
Test Number: 060320



B-119

060320

Report No. : RRMS-991018  
Report Date : Septmber. 10. 1999

FMVSS 208 "Occupant Crash Protection" Compliance Test  
for the 2002 Toyota TACOMA Pick up (summary)

1. Test Date : July. 29. 1999
2. Test Location : Hino Vehicle Safety Laboratory
3. Test Vehicle : 2001 Model Toyota TACOMA Pick up  
\*Body Type : 4×4 Double Cab  
\*engine : 5VZ-FE
4. Test Condition :

4.1 Type of Test

☐ frontal , ☐ angular Left , ☒ angular Right , ☐ Sled Test

4.2 Use of Manual or Automatic Belt

Driver : ☒ Yes ☐ No  
Passenger : ☒ Yes ☐ No

4.3 Test Speed (or  $\Delta V$ ) : 30.0mph

4.4 Vehicle Weight : 4431 lbs (2010kg)

5. Test Results

		Driver	Passenger
Head Injuly Criterion (HIC)		248	488
Chest Deceleration (G's)		33.9	44.3
Chest Deflection (inch)		1.3	1.0
Femur Loads (lbs)	Right	354.6	424.4
	Left	644.4	891.1
Neck Injuly	Flexion Bending Moment (Nm)		
	Extension Bending Moment (Nm)		
	Axial Tension (N)		
	Axial Compression (N)		
	Fore-and-Aft Shear (N)		

# 56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

Date: 03/20/2006

Time: 12:01

## LEFT FRONT SEAT TRACK Y-AXIS VELOCITY

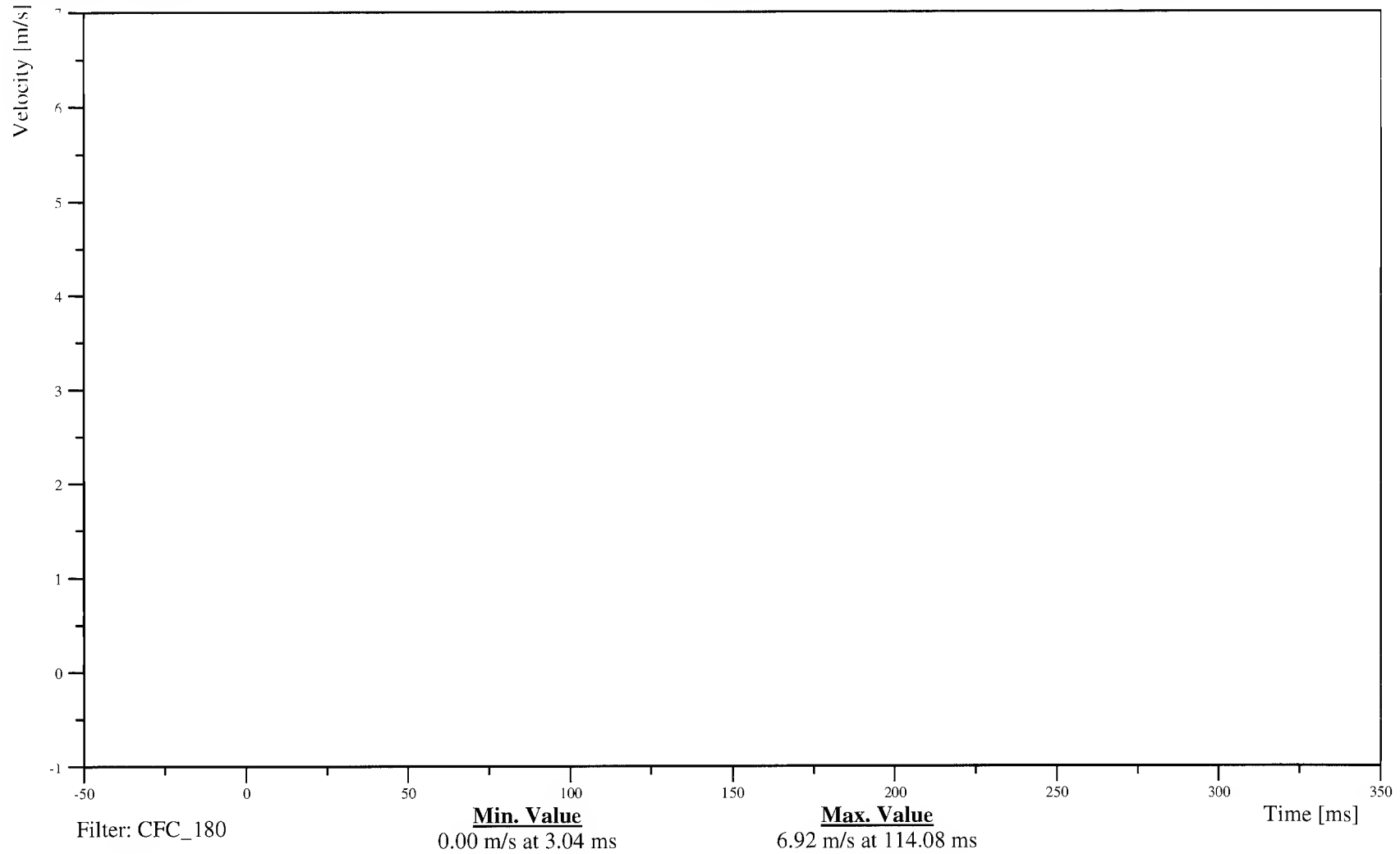
Customer: NHTSA

Test Number: C60106

11SETRFR0000VEYC

TRC Inc. Test Lab: CTF

Test Number: 060320



B-120

060320

56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

Date: 03/20/2006

LEFT REAR SEAT TRACK Y-AXIS ACCELERATION

Time: 12:01

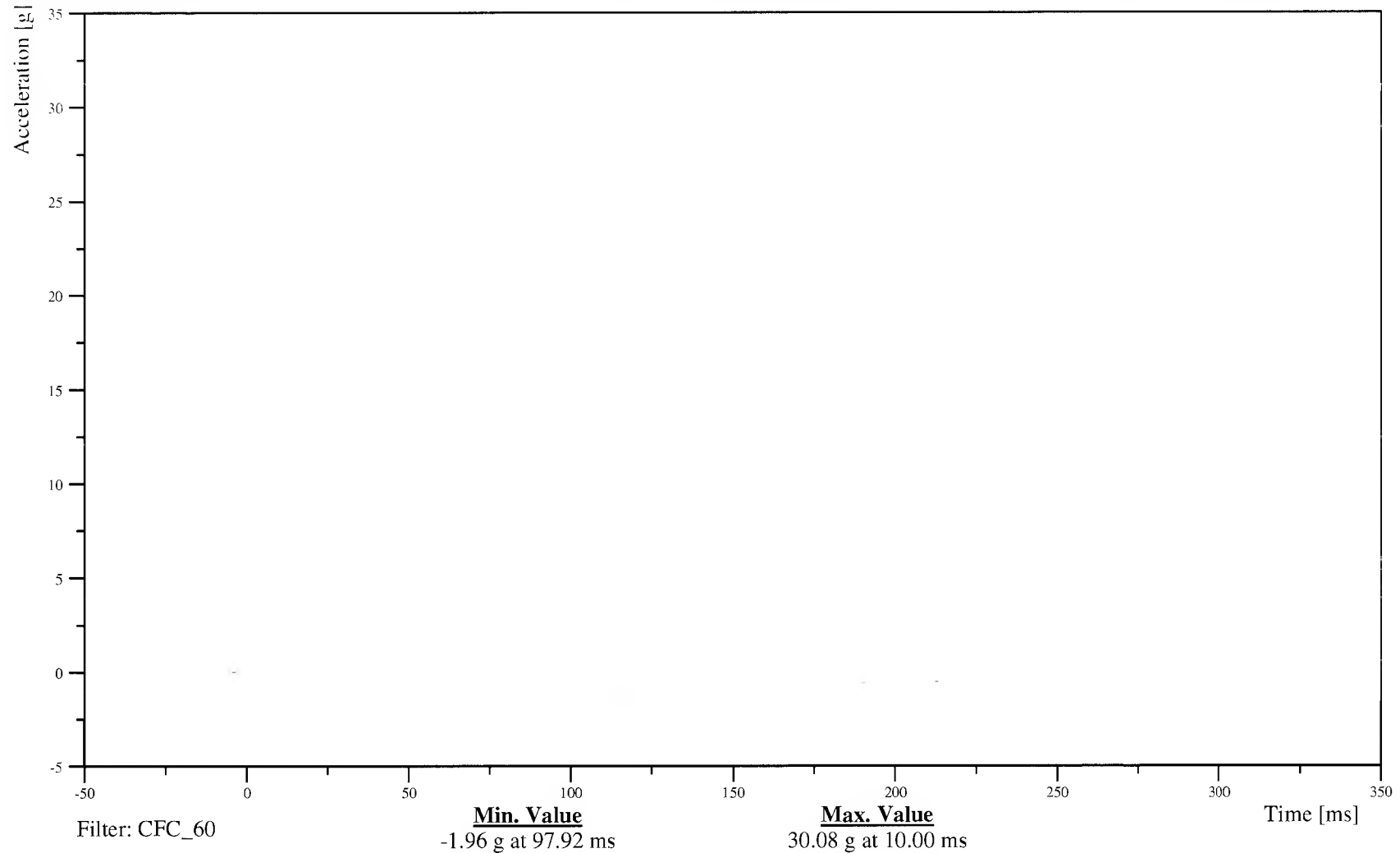
Customer: NHTSA

Test Number: C60106

14SETRLERE00ACYD

TRC Inc. Test Lab: CTF

Test Number: 060320



B-121

060320



56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

Date: 03/20/2006

Time: 12:01

LEFT REAR SEAT TRACK Y-AXIS VELOCITY

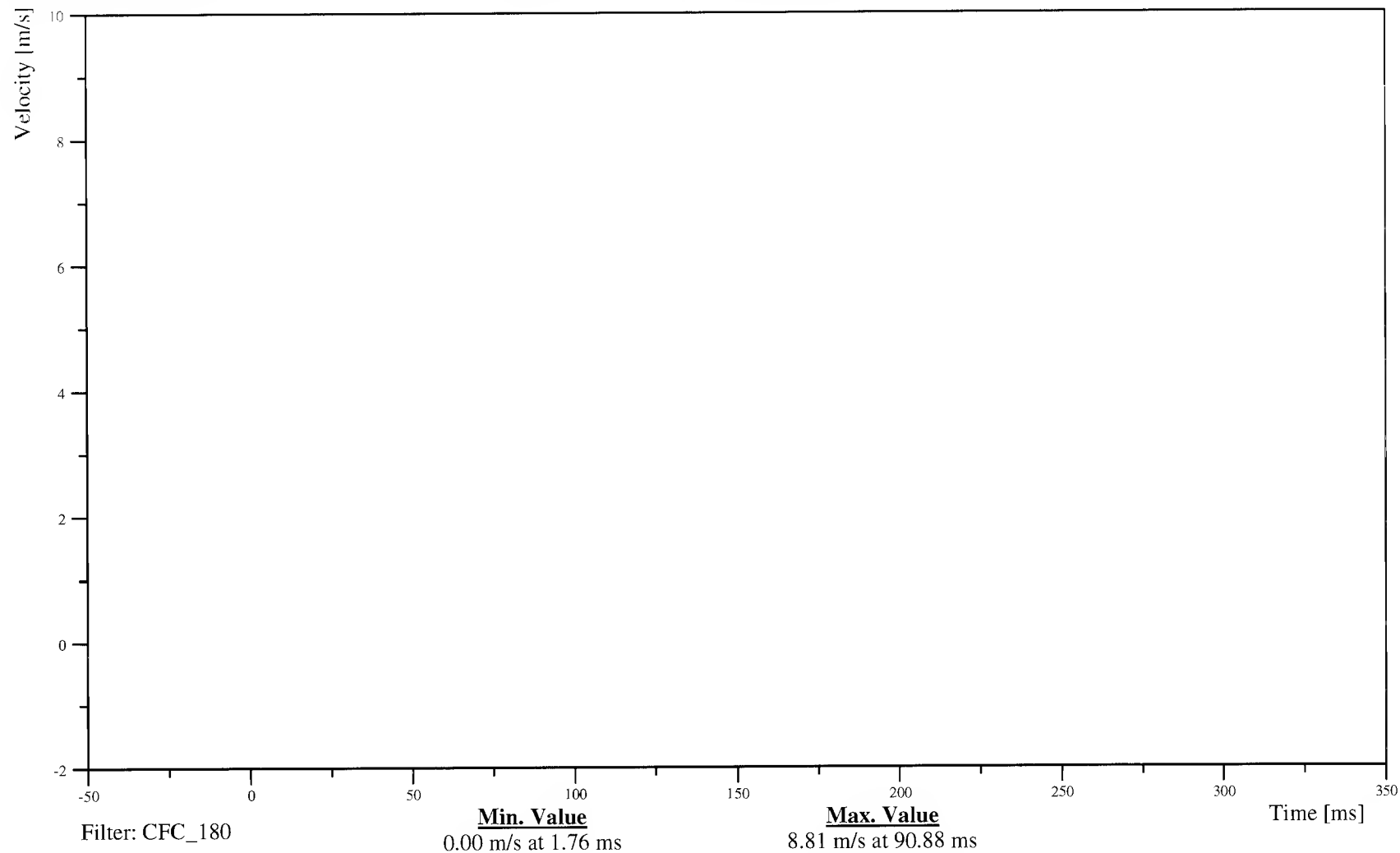
Customer: NHTSA

Test Number: C60106

14SETRLERE00VEYC

TRC Inc. Test Lab: CTF

Test Number: 060320



B-122

060320

# 56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

Date: 03/20/2006

Time: 12:01

## VEHICLE CENTER OF GRAVITY X-AXIS ACCELERATION

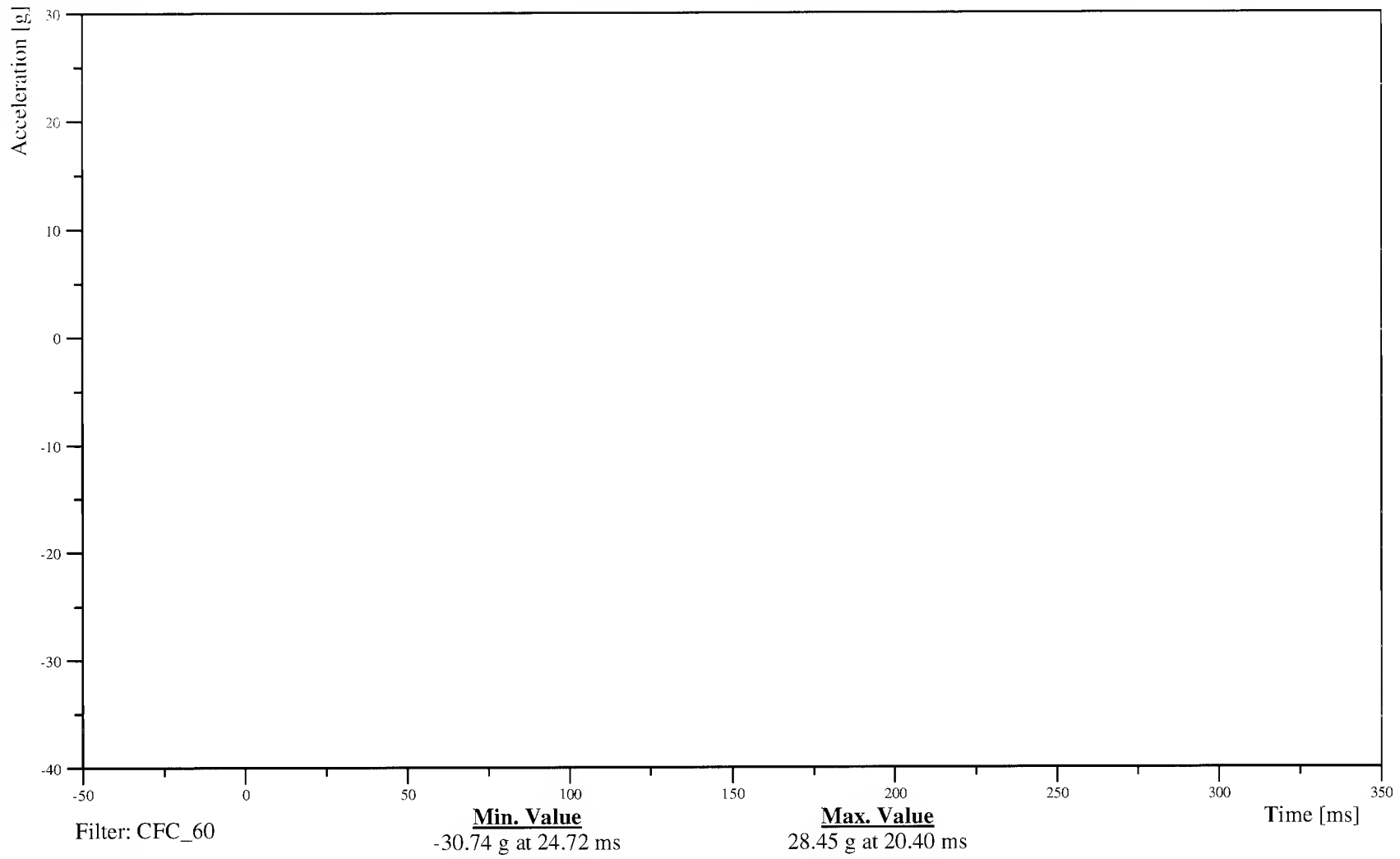
Customer: NHTSA

Test Number: C60106

10VEHCCG0000ACXD

TRC Inc. Test Lab: CTF

Test Number: 060320



B-123

060320

56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

Date: 03/20/2006

Time: 12:01

VEHICLE CENTER OF GRAVITY X-AXIS VELOCITY

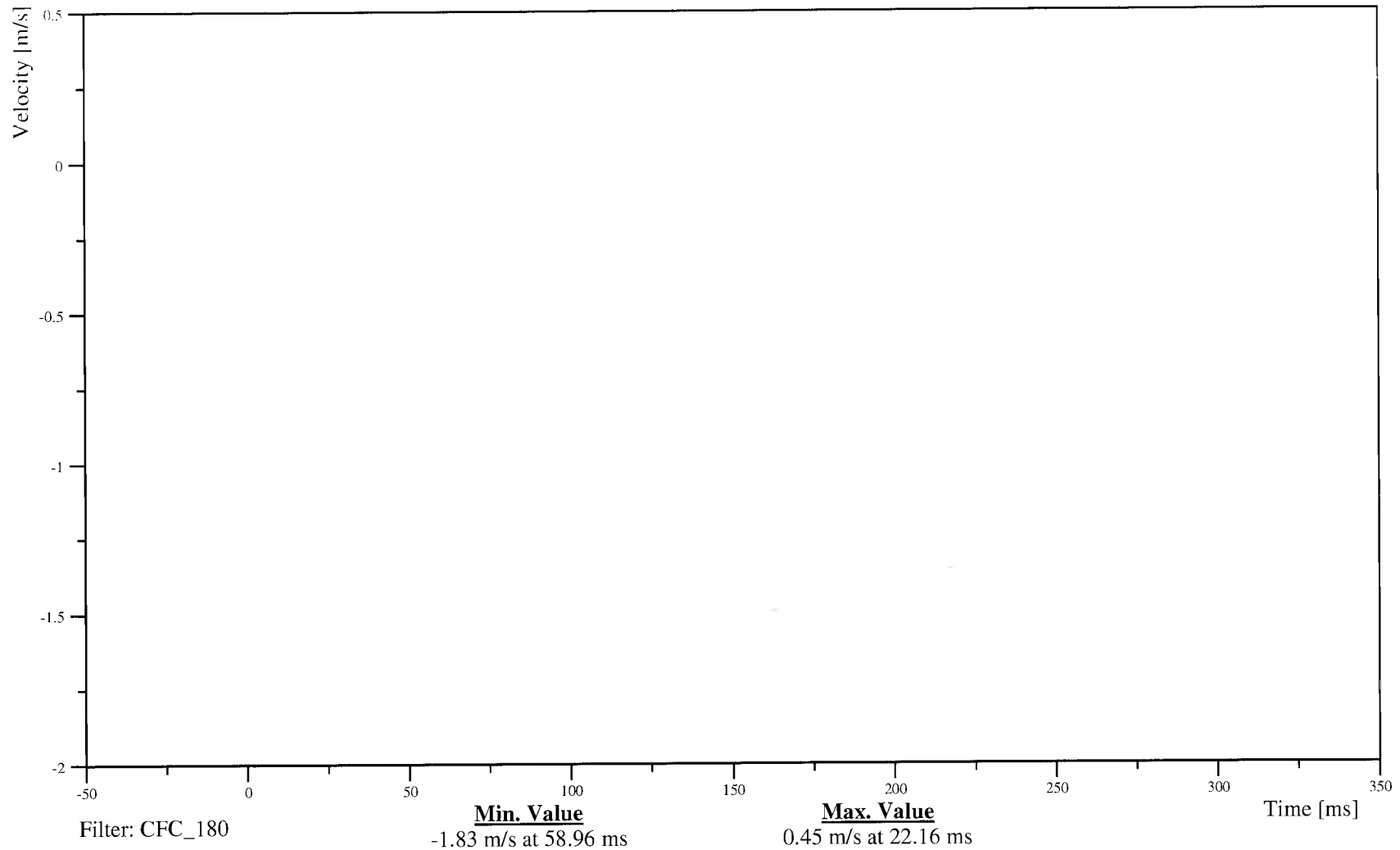
Customer: NHTSA

Test Number: C60106

10VEHCCG0000VEXC

TRC Inc. Test Lab: CTF

Test Number: 060320



B-124

060320

56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

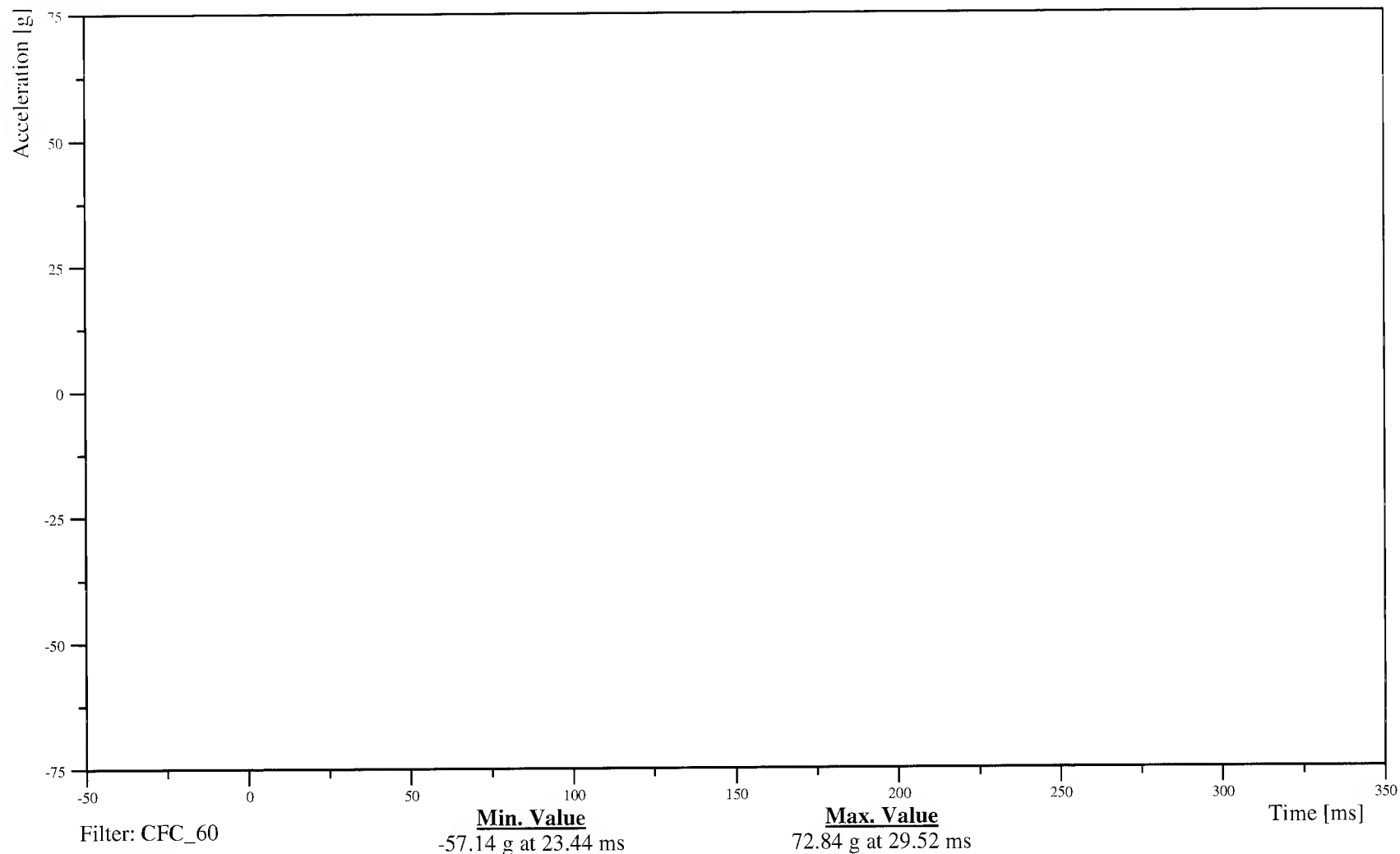
Date: 03/20/2006  
Time: 12:01

VEHICLE CENTER OF GRAVITY Y-AXIS ACCELERATION

Customer: NHTSA  
Test Number: C60106

10VEHCCG0000ACYD

TRC Inc. Test Lab: CTF  
Test Number: 060320



B-125

060320

56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

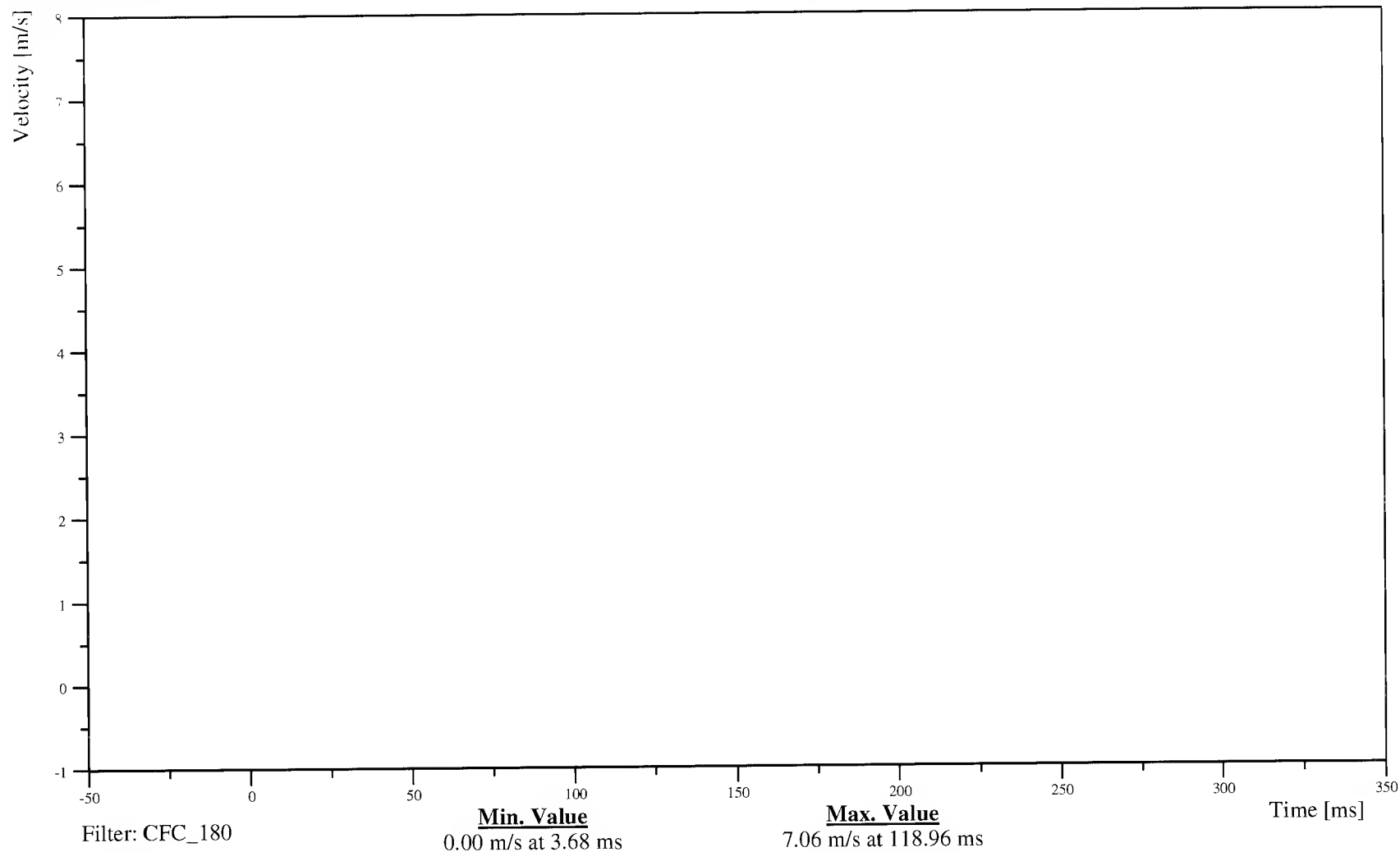
Date: 03/20/2006  
Time: 12:01

VEHICLE CENTER OF GRAVITY Y-AXIS VELOCITY

Customer: NHTSA  
Test Number: C60106

10VEHCCG0000VEYC

TRC Inc. Test Lab: CTF  
Test Number: 060320



56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

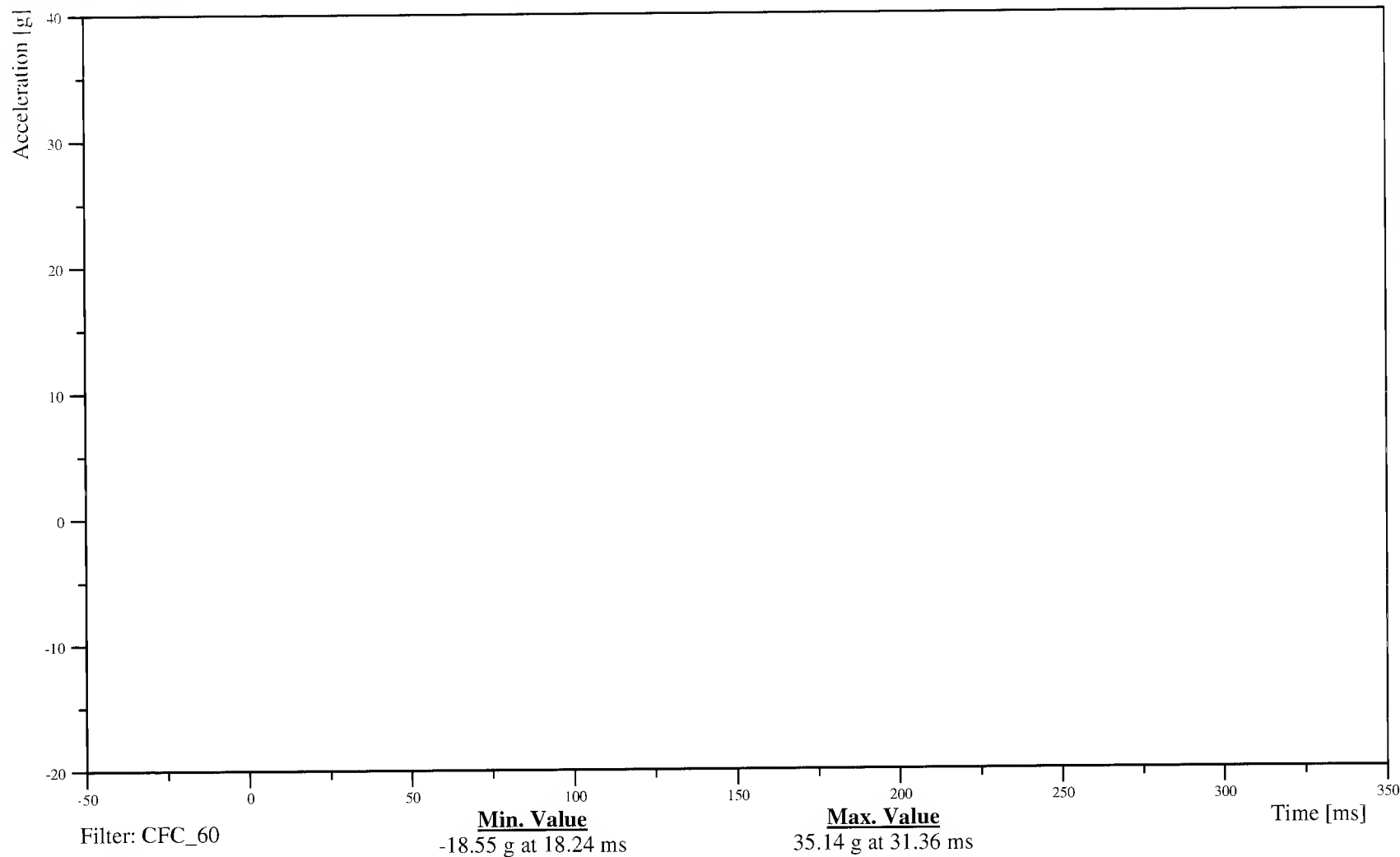
Date: 03/20/2006  
Time: 12:01

VEHICLE CENTER OF GRAVITY Z-AXIS ACCELERATION

Customer: NHTSA  
Test Number: C60106

10VEHCCG0000ACZD

TRC Inc. Test Lab: CTF  
Test Number: 060320



B-127

060320



56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

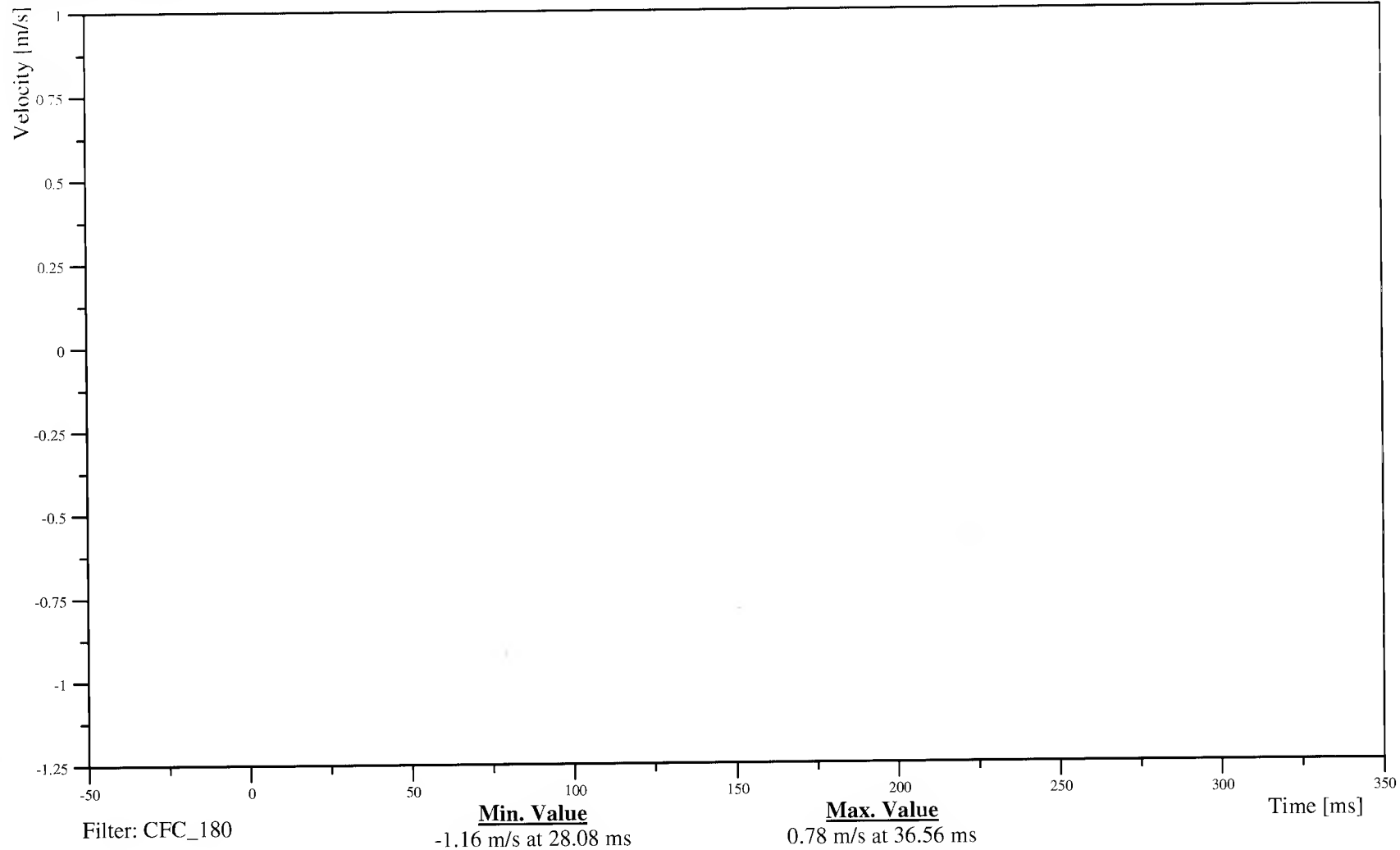
Date: 03/20/2006  
Time: 12:01

VEHICLE CENTER OF GRAVITY Z-AXIS VELOCITY

Customer: NHTSA  
Test Number: C60106

10VEHCCG0000VEZC

TRC Inc. Test Lab: CTF  
Test Number: 060320



B-128

060320

56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

Date: 03/20/2006

VEHICLE CENTER OF GRAVITY RESULTANT ACCELERATION

Time: 12:01

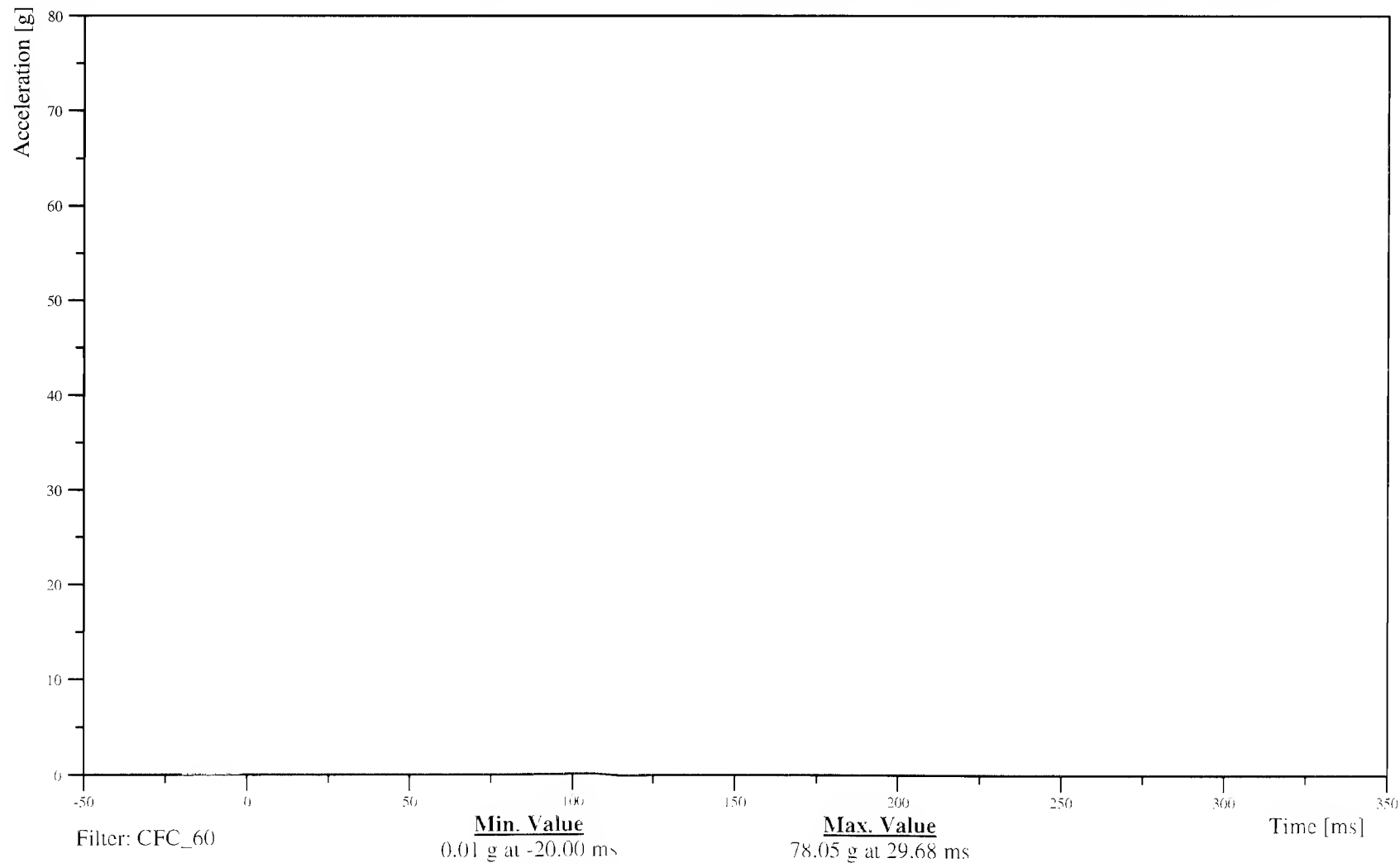
Customer: NHTSA

Test Number: C60106

10VEHCCG0000ACRD

TRC Inc. Test Lab: CTF

Test Number: 060320



B-129

060320

MDB Instrumentation Plots

Acceleration Data - Filter Class 60

Integration Data - Filter Class 180

56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

Date: 03/20/2006  
Time: 12:01

MDB CENTER OF GRAVITY X-AXIS ACCELERATION

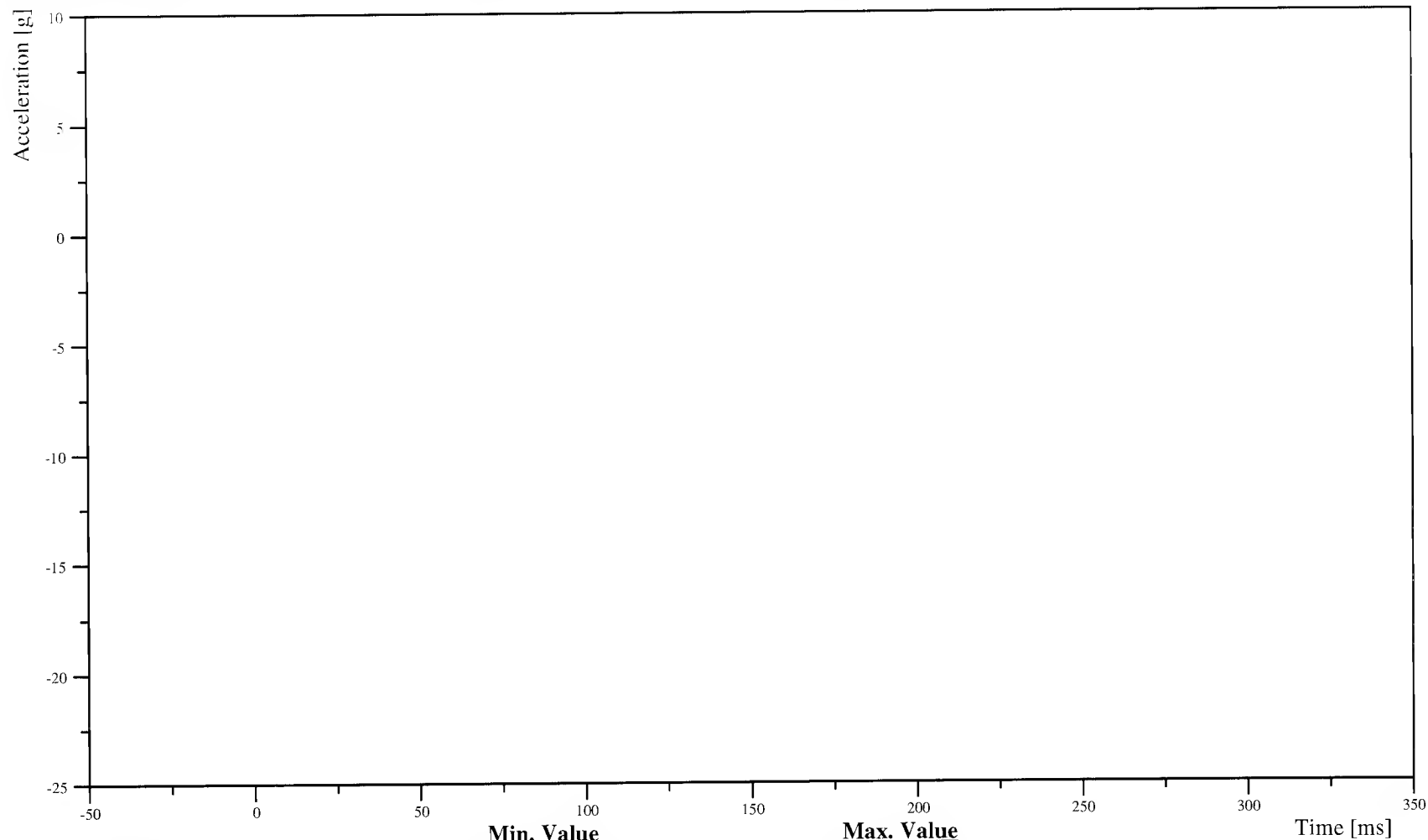
Customer: NHTSA

Test Number: C60106

M0VEHCCG0000ACXD

TRC Inc. Test Lab: CTF

Test Number: 060320



B-131

060320

56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

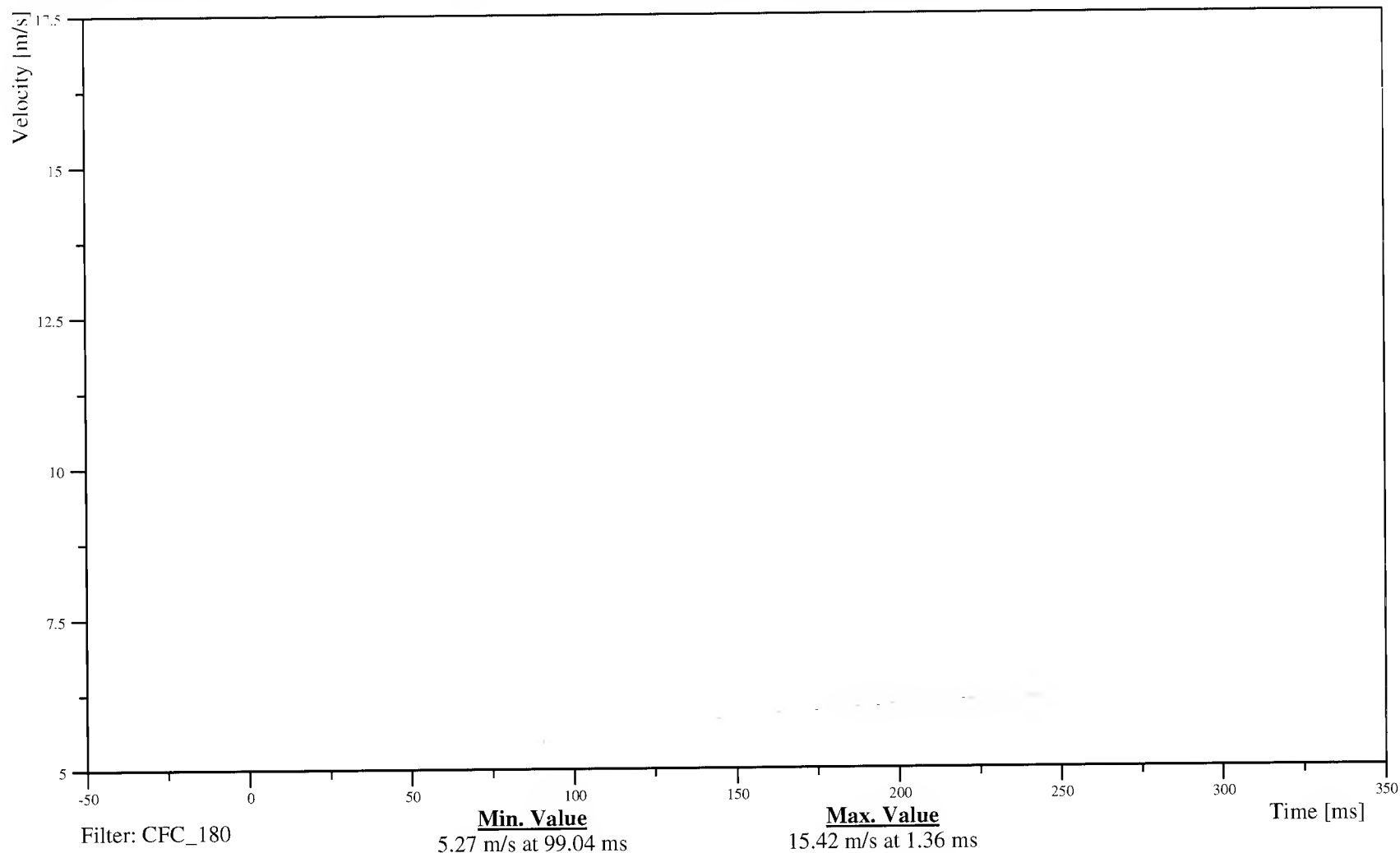
Date: 03/29/2006  
Time: 12:01

MDB CENTER OF GRAVITY X-AXIS VELOCITY

Customer: NHTSA  
Test Number: C60106

M0VEHCCG0000VEXC

TRC Inc. Test Lab: CTF  
Test Number: 060320



B-132

060320

56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

Date: 03/20/2006

Time: 12:01

MDB CENTER OF GRAVITY Y-AXIS ACCELERATION

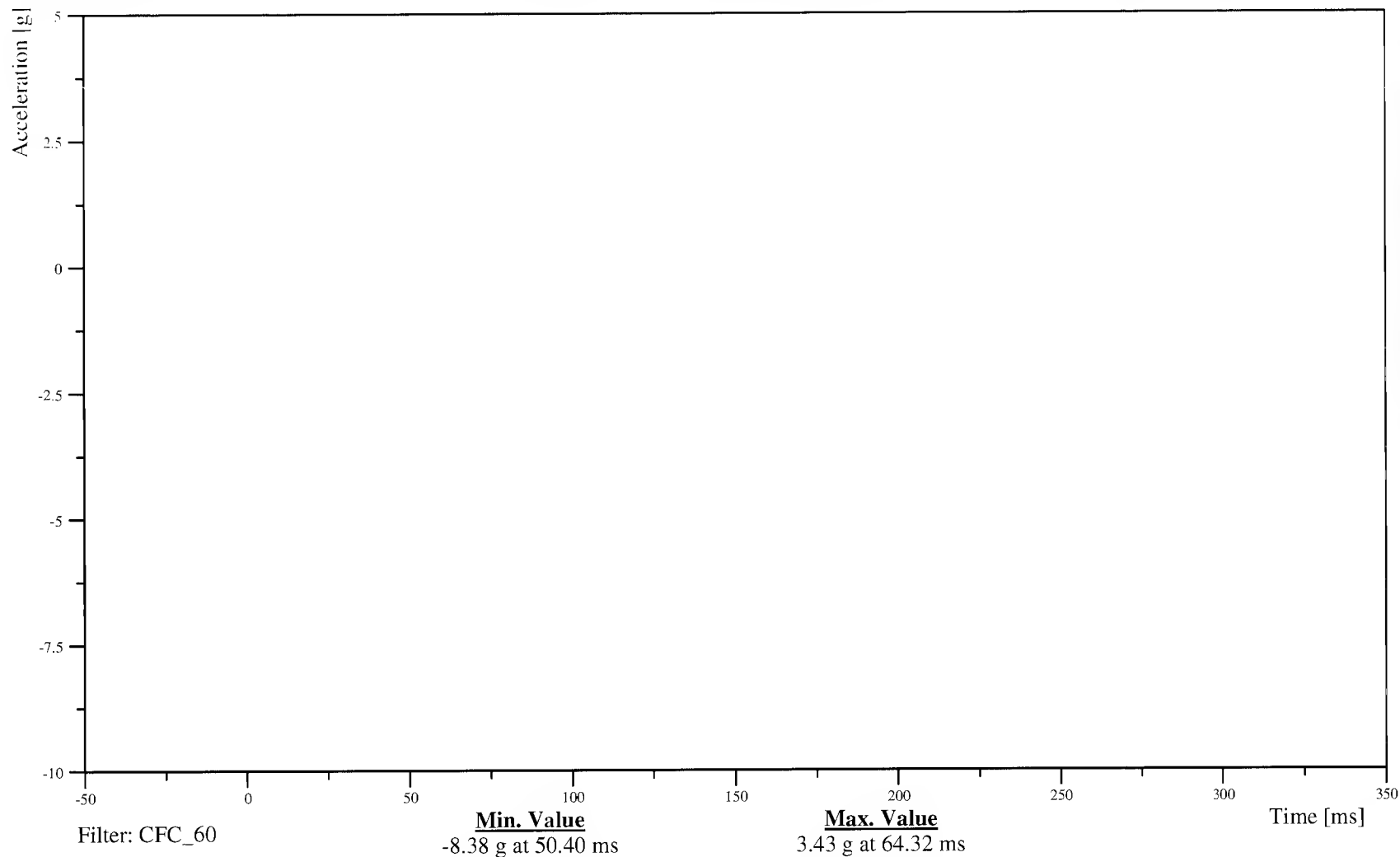
Customer: NHTSA

Test Number: C60106

M0VEHCCG0000ACYD

TRC Inc. Test Lab: CTF

Test Number: 060320



B-133

060320



56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

Date: 03/20/2006

MDB CENTER OF GRAVITY Y-AXIS VELOCITY

Time: 12:01

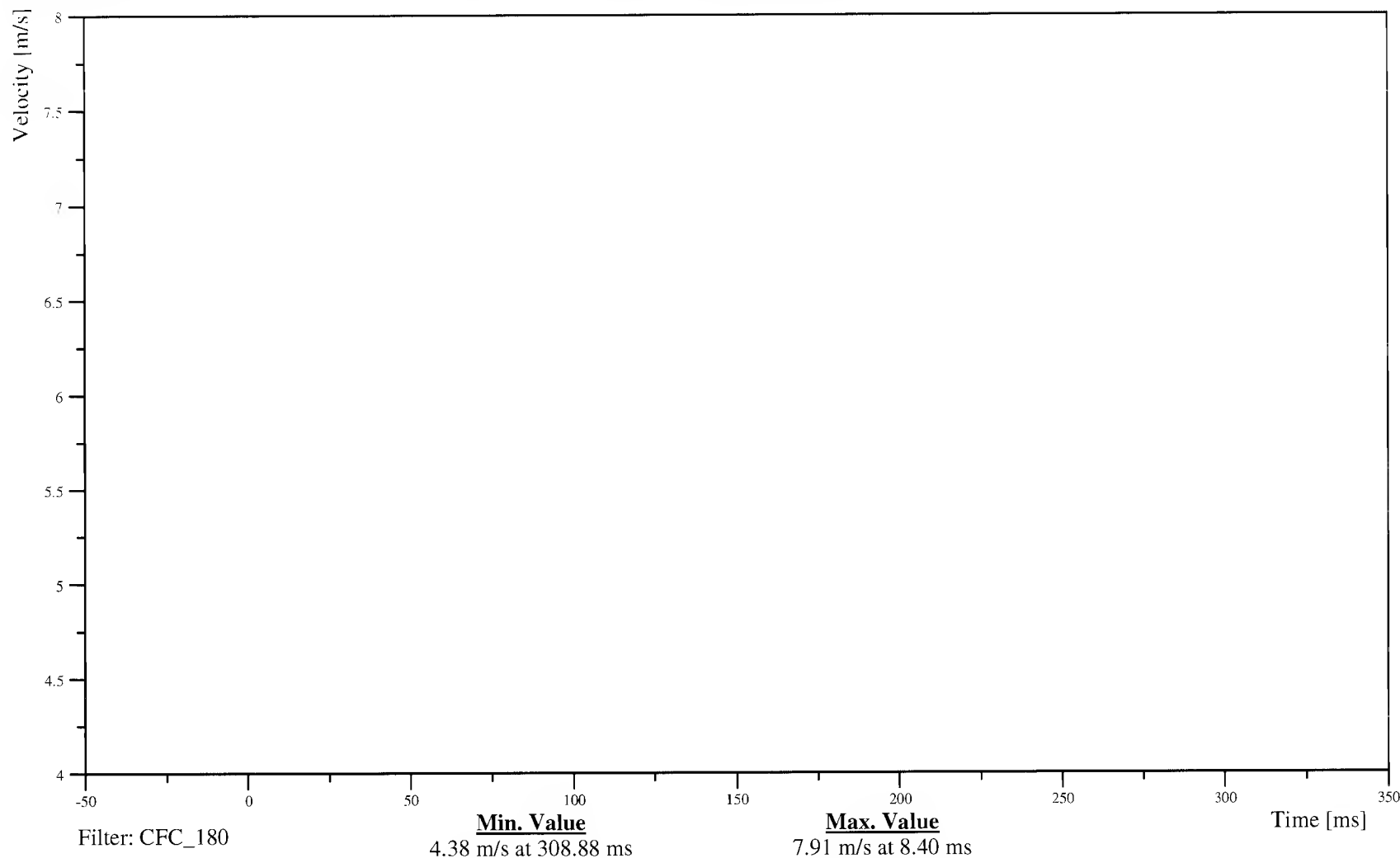
Customer: NHTSA

Test Number: C60106

M0VEHCCG0000VEYC

TRC Inc. Test Lab: CTF

Test Number: 060320



B-134

060320

56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

Date: 03/20/2006

Time: 12:01

MDB CENTER OF GRAVITY Z-AXIS ACCELERATION

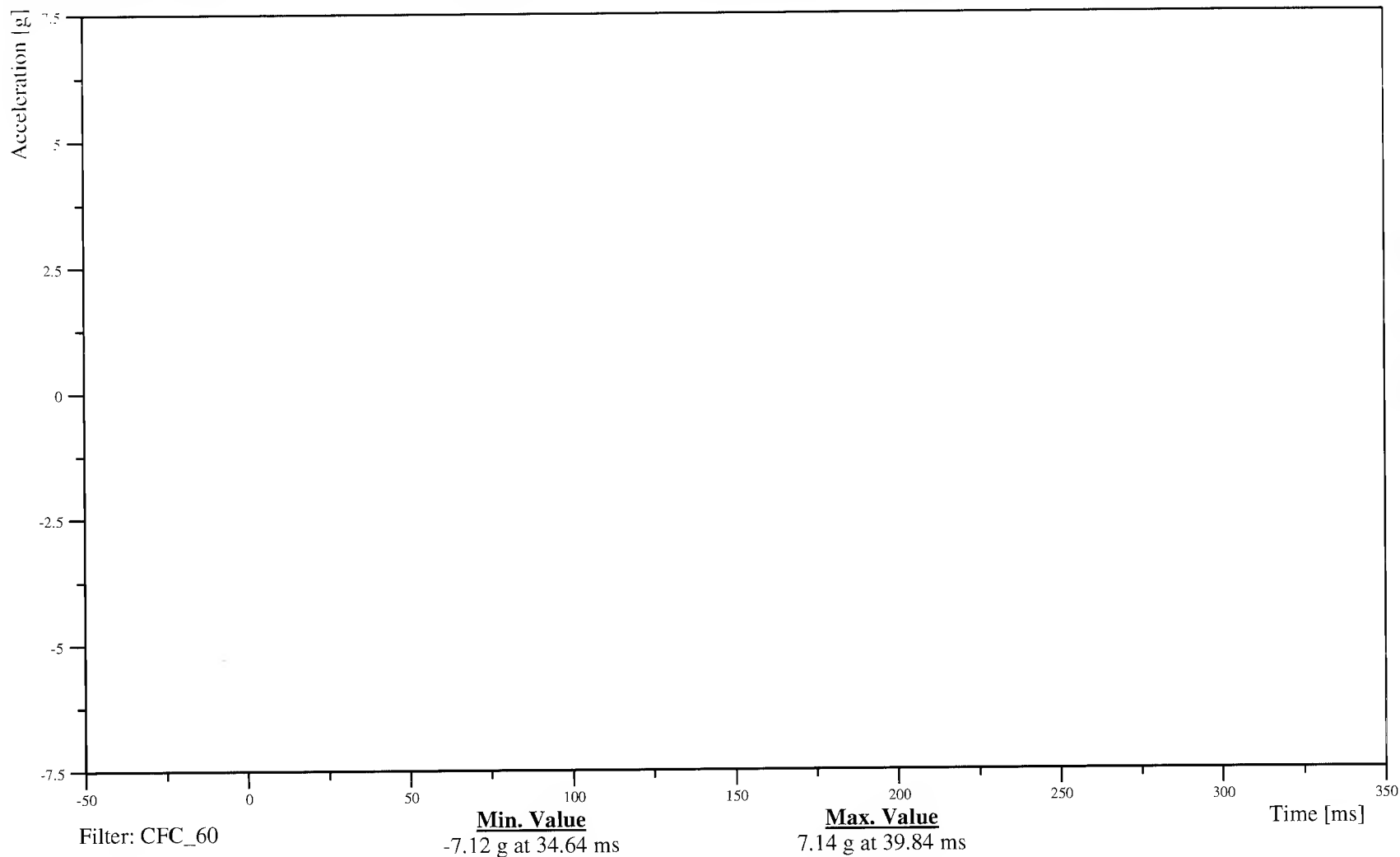
Customer: NHTSA

Test Number: C60106

M0VEHCCG0000ACZD

TRC Inc. Test Lab: CTF

Test Number: 060320



B-135

060320

56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

Date: 03/20/2006

Time: 12:01

MDB CENTER OF GRAVITY Z-AXIS VELOCITY

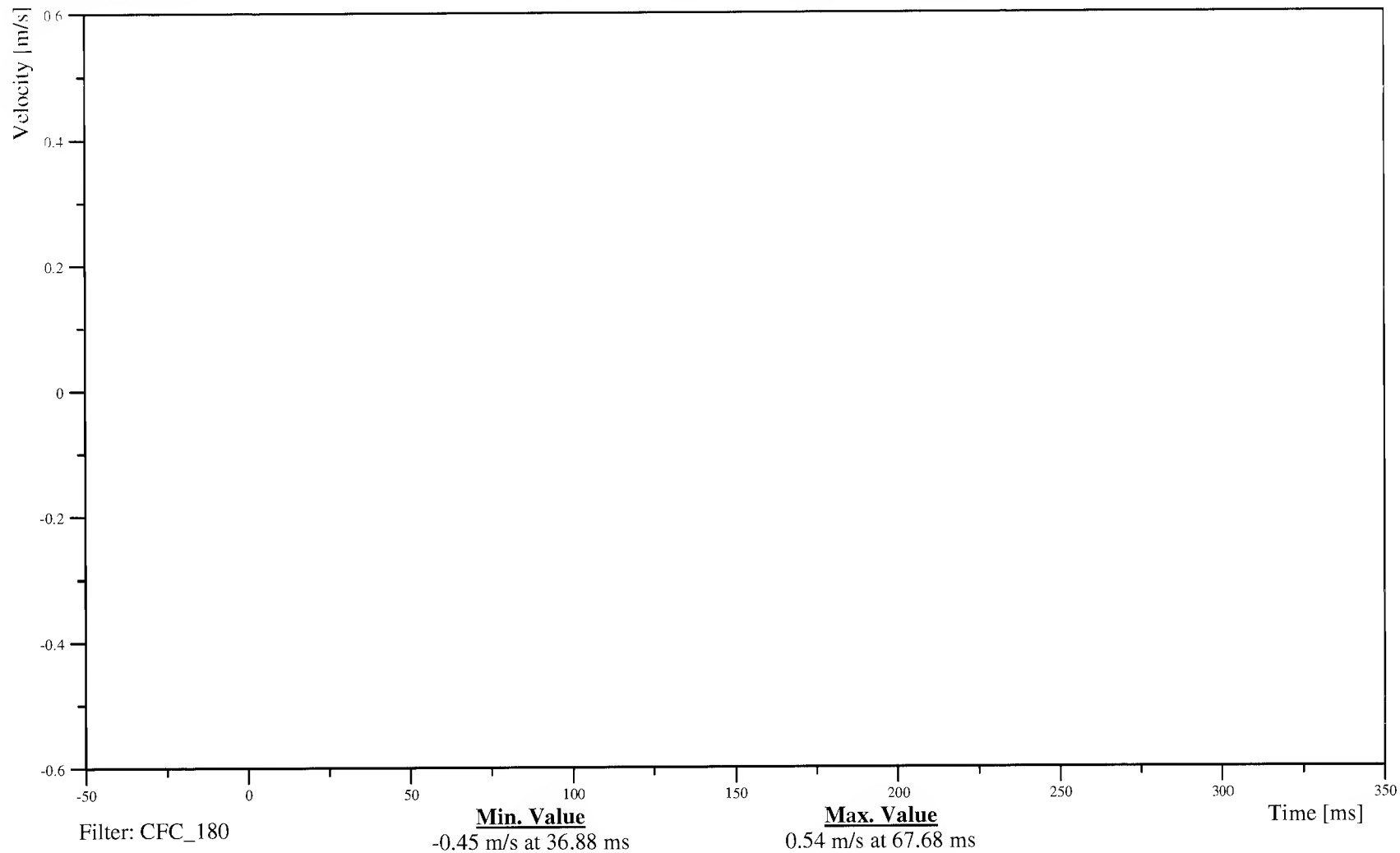
Customer: NHTSA

Test Number: C60106

M0VEHCCG0000VEZC

TRC Inc. Test Lab: CTF

Test Number: 060320



B-136

060320

56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

Date: 03/20/2006

Time: 12:01

MDB CENTER OF GRAVITY RESULTANT ACCELERATION

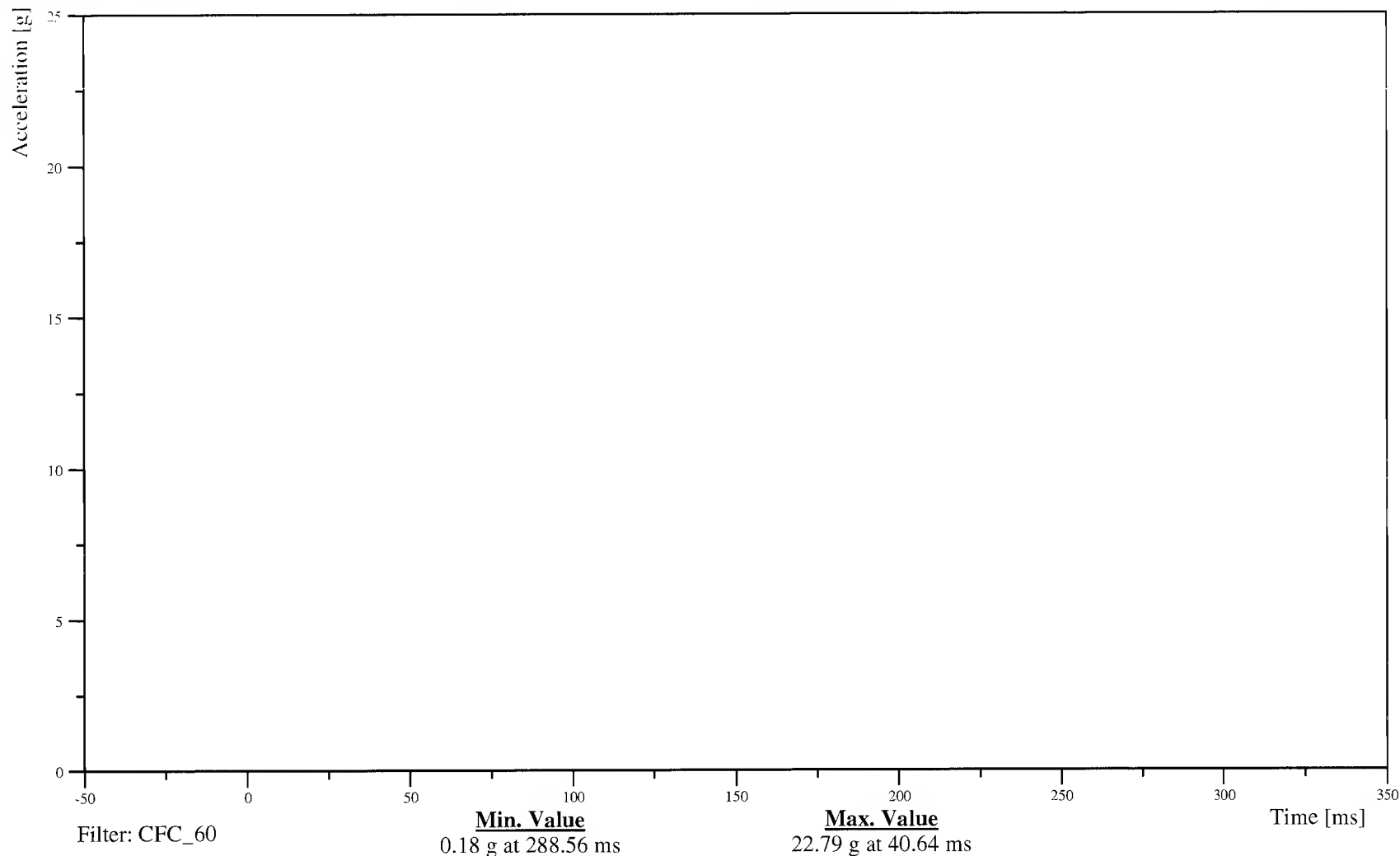
Customer: NHTSA

Test Number: C60106

M0VEHCCG0000ACRD

TRC Inc. Test Lab: CTF

Test Number: 060320



B-137

060320

56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

Date: 03/20/2006

Time: 12:01

MDB REAR X-AXIS ACCELERATION

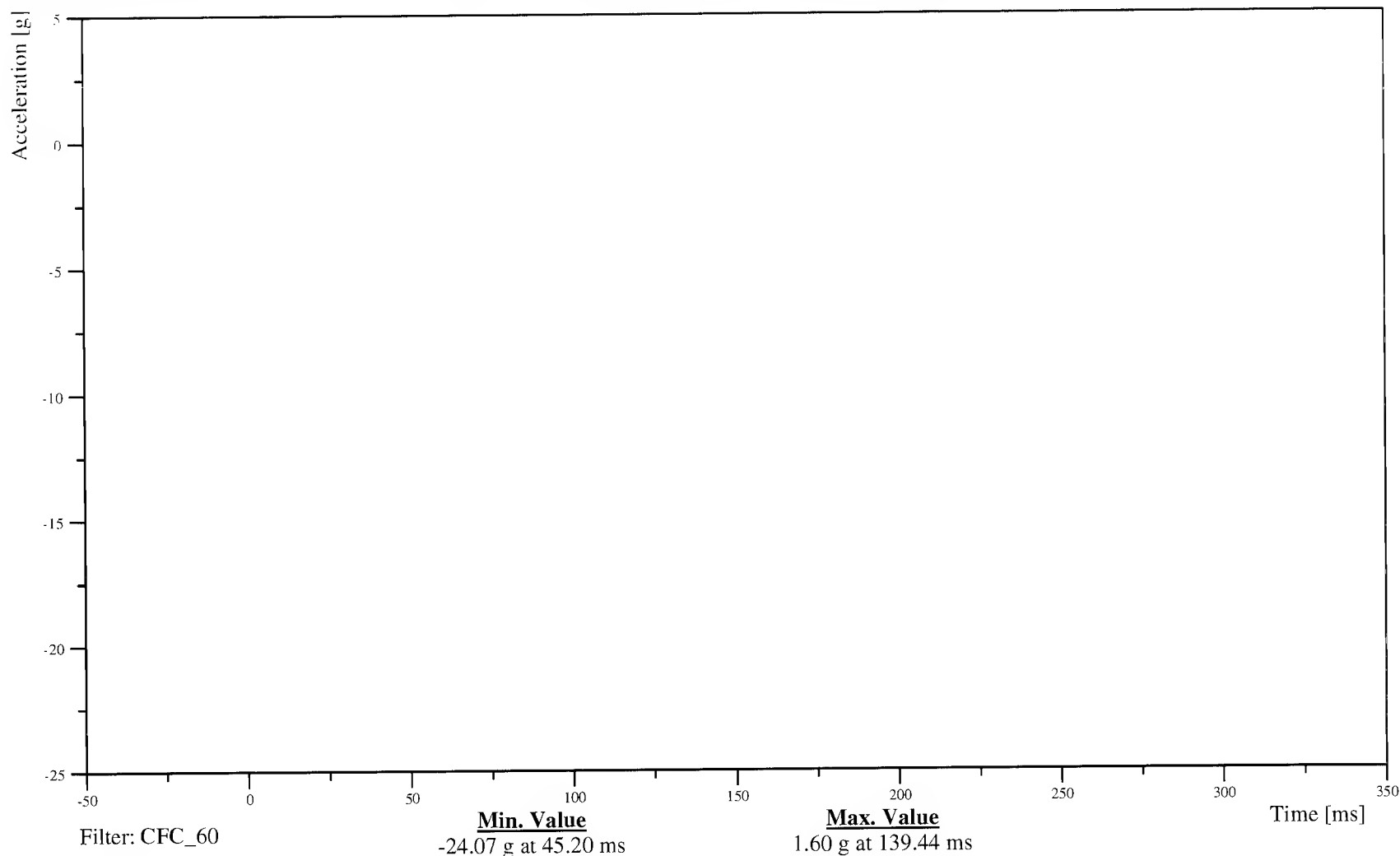
Customer: NHTSA

Test Number: C60106

M7FRAM000000ACXD

TRC Inc. Test Lab: CTF

Test Number: 060320



B-138

060320

56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

Date: 03/20/2006

Time: 12:01

MDB REAR X-AXIS VELOCITY

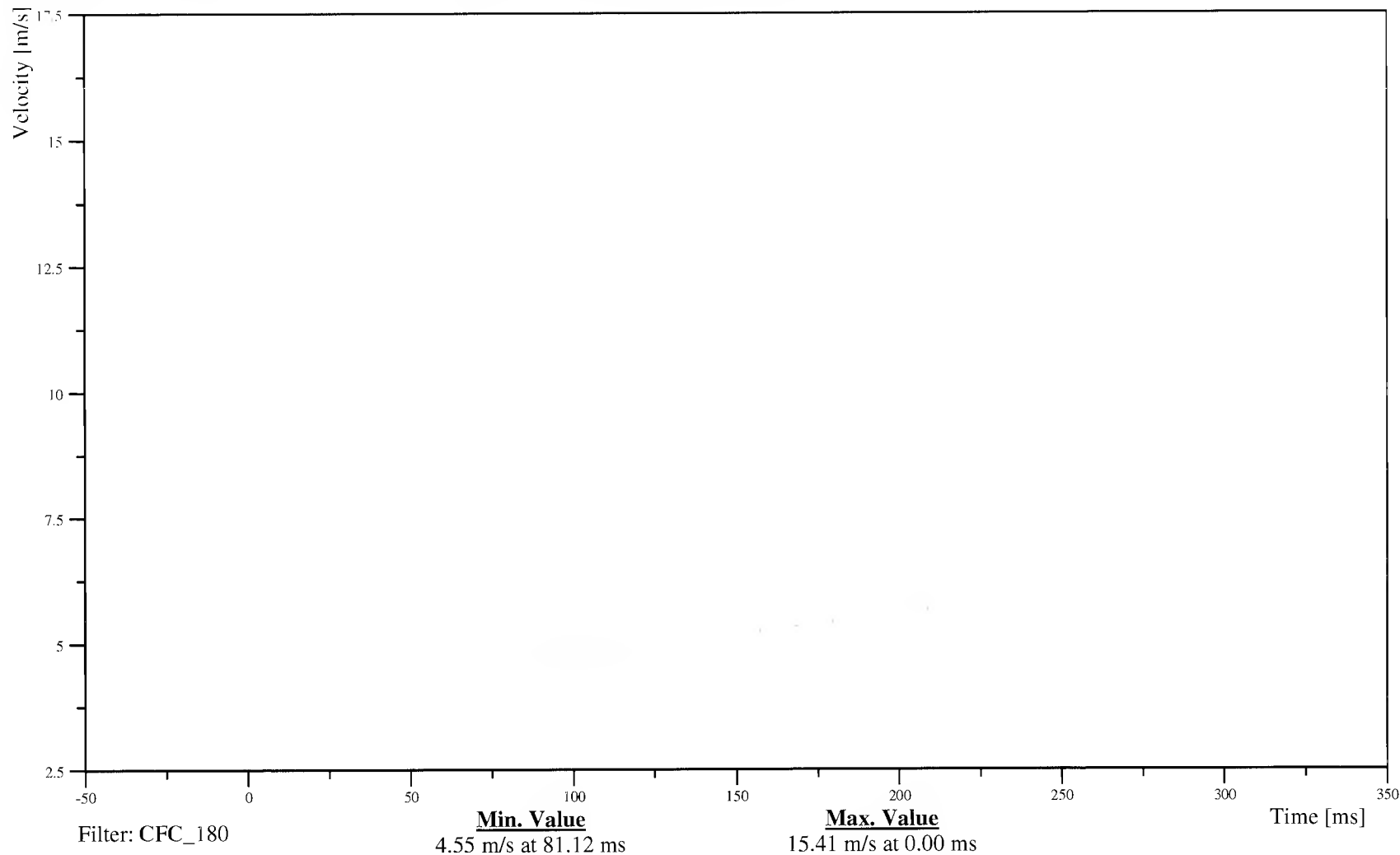
Customer: NHTSA

Test Number: C60106

M7FRAM000000VEXC

TRC Inc. Test Lab: CTF

Test Number: 060320



B-139

060320



56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

Date: 03/20/2006

Time: 12:01

MDB REAR Y-AXIS ACCELERATION

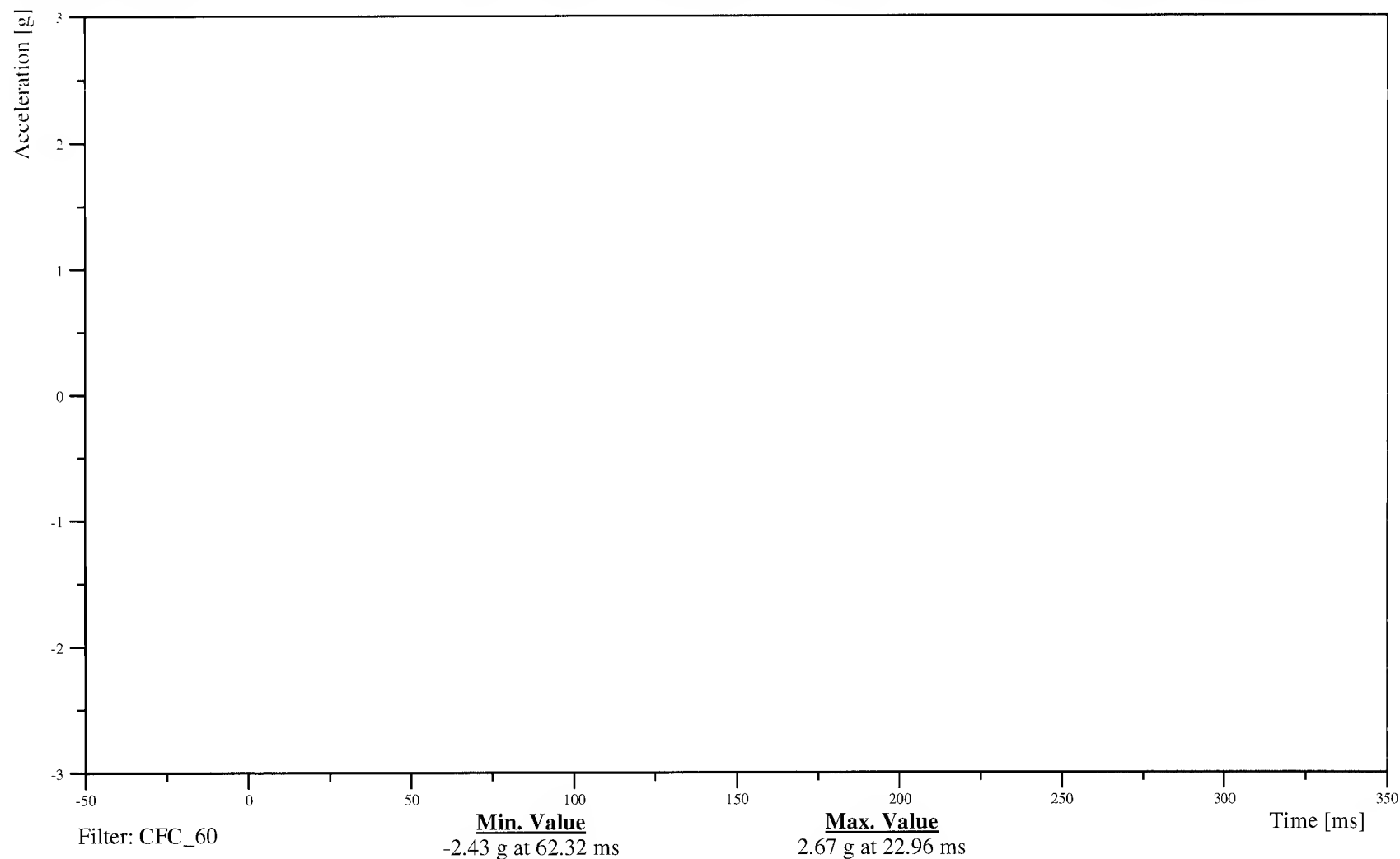
Customer: NHTSA

Test Number: C60106

M7FRAM000000ACYD

TRC Inc. Test Lab: CTF

Test Number: 060320



B-140

060320

56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

Date: 03/20/2006

Time: 12:01

MDB REAR Y-AXIS VELOCITY

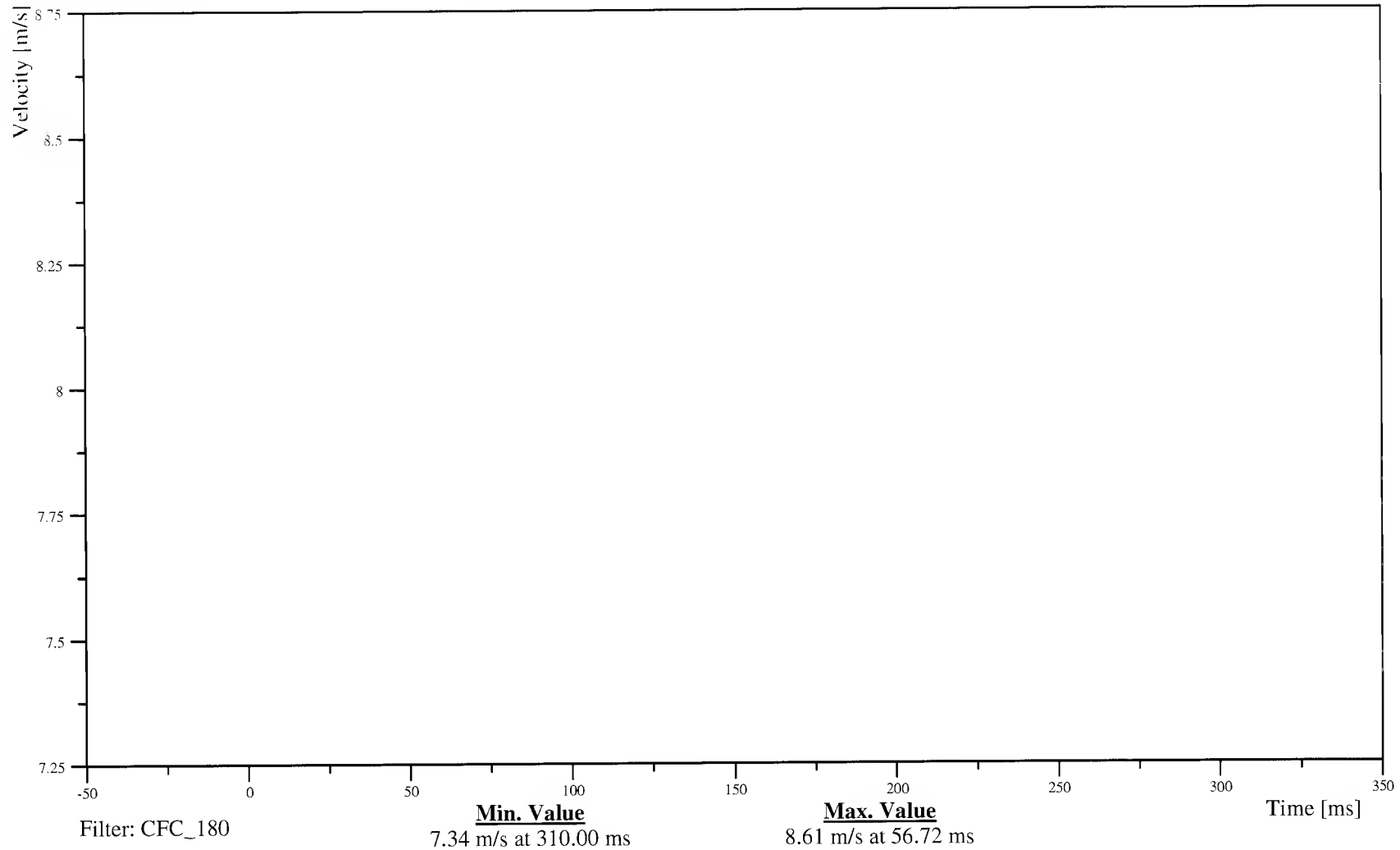
Customer: NHTSA

Test Number: C60106

M7FRAM000000VEYC

TRC Inc. Test Lab: CTF

Test Number: 060320



B-141

060320

56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

Date: 03/20/2006

Time: 12:01

MDB RIGHT CONTACT SWITCH

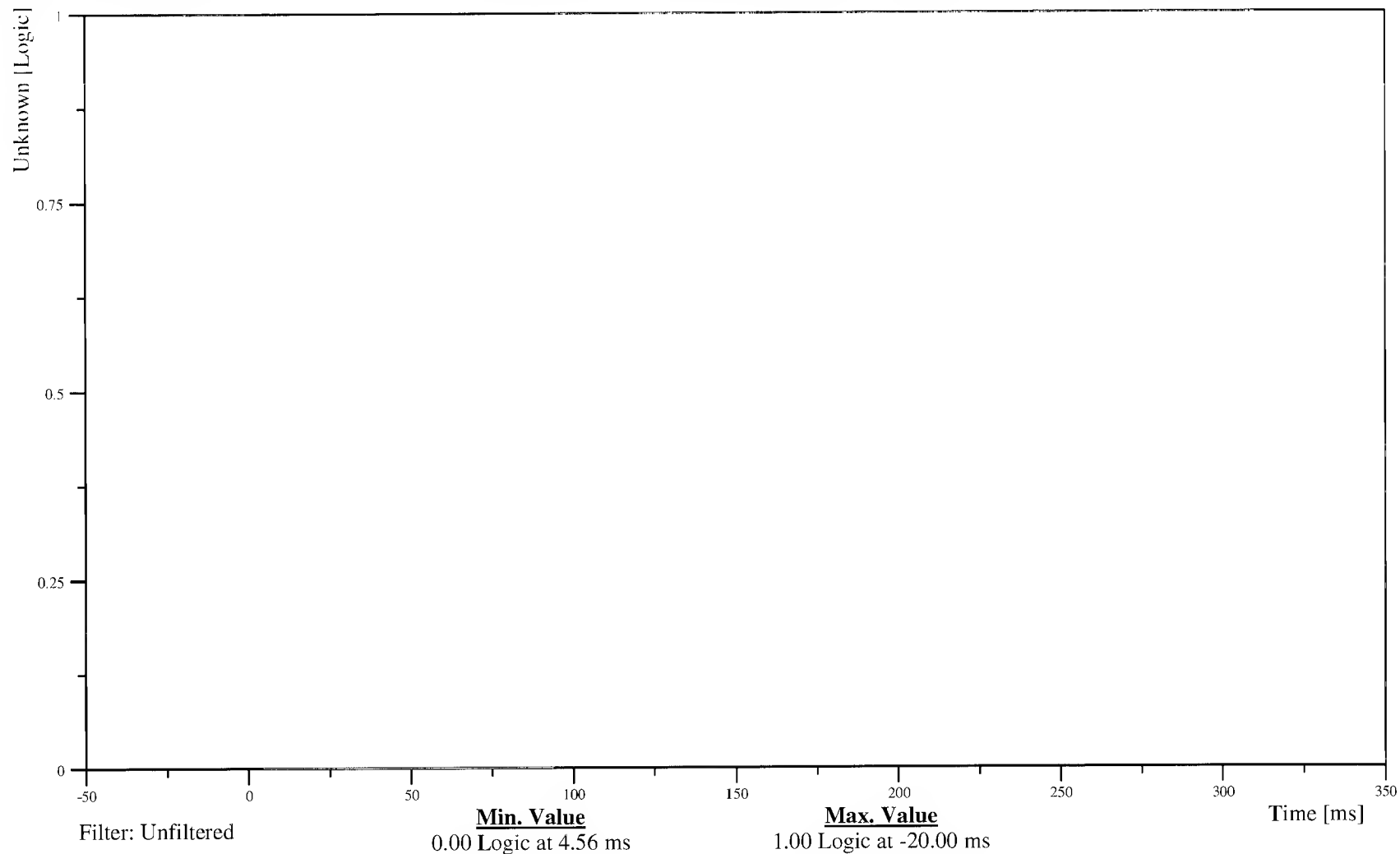
Customer: NHTSA

Test Number: C60106

M3CONT000000VO00

TRC Inc. Test Lab: CTF

Test Number: 060320



B-142

060320

56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

Date: 03/20/2006

MDB LEFT CONTACT SWITCH

Time: 12:01

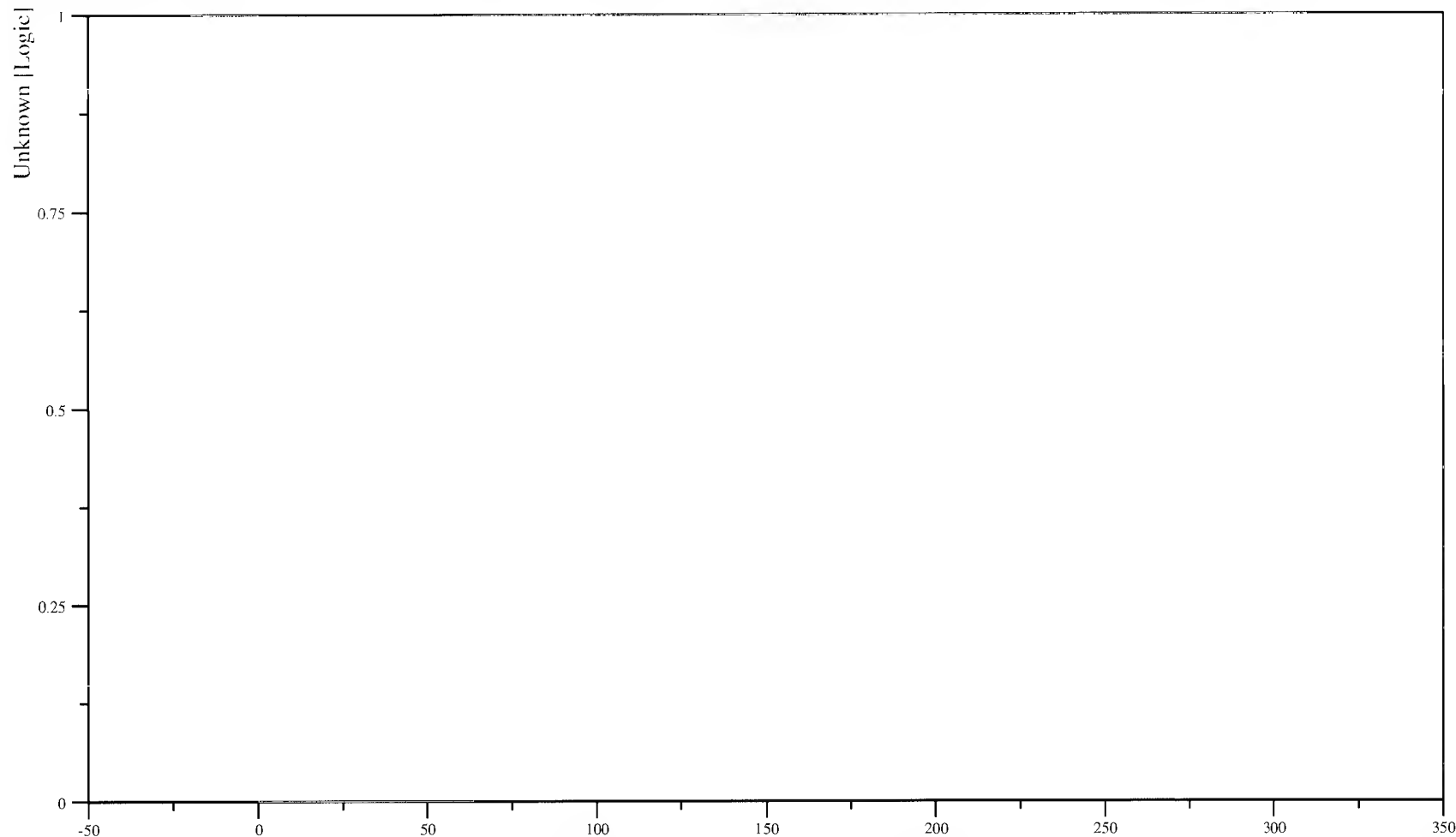
Customer: NHTSA

Test Number: C60106

M1CONT000000VO00

TRC Inc. Test Lab: CTF

Test Number: 060320



Filter: Unfiltered

Min. Value

0.00 Logic at 0.16 ms

Max. Value

1.00 Logic at -20.00 ms

B-143

060320

Driver and Passenger Dummy Instrumentation Plots  
Acceleration Data - FIR Filtered

56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

Date: 03/20/2006

DRIVER UPPER RIB Y-AXIS ACCELERATION

Time: 12.01

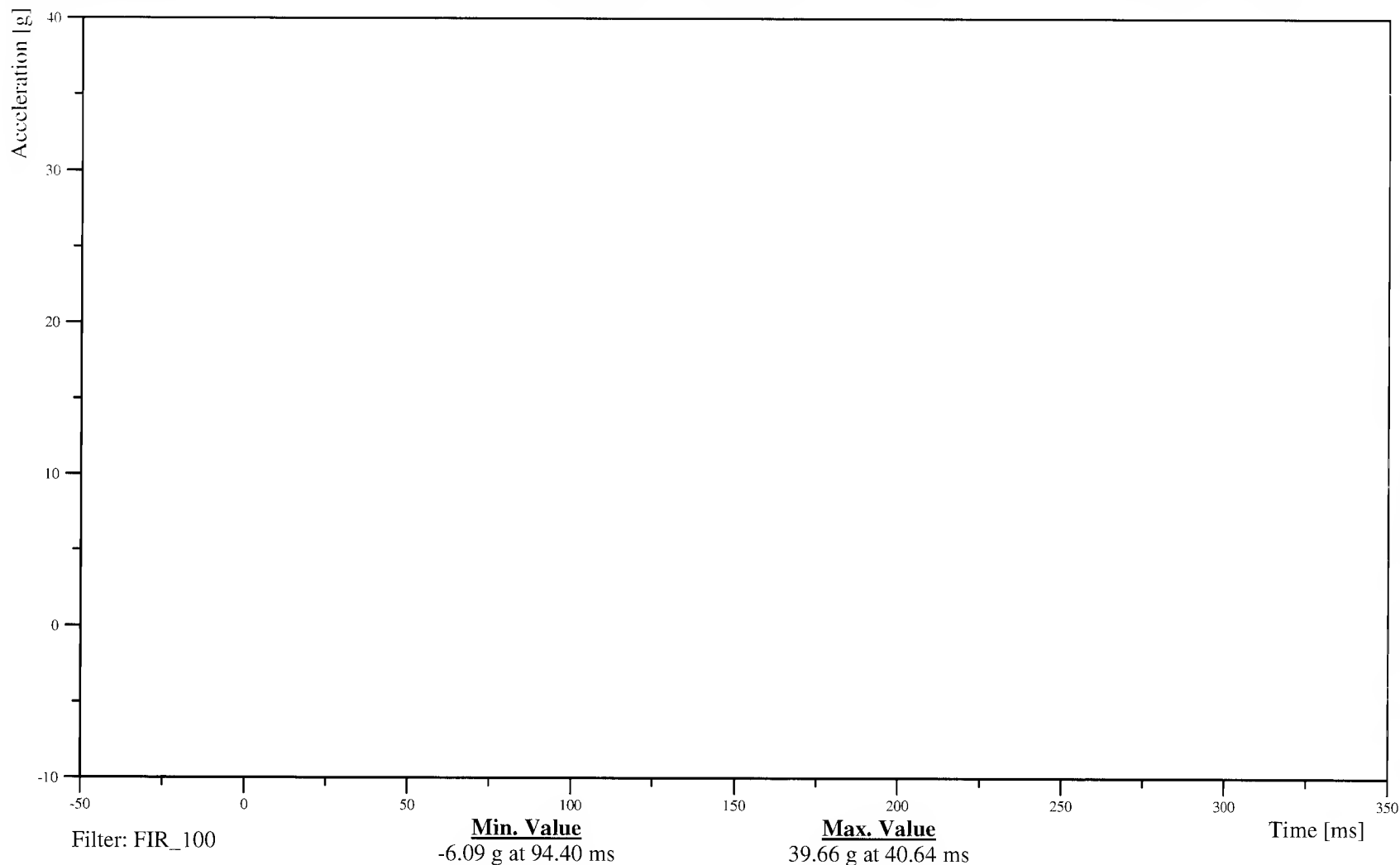
Customer: NHTSA

Test Number: C60106

11RIBSLU00SHACY1

TRC Inc. Test Lab: CTF

Test Number: 060320



B-145

060320



# 56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

## DRIVER LOWER RIB Y-AXIS ACCELERATION

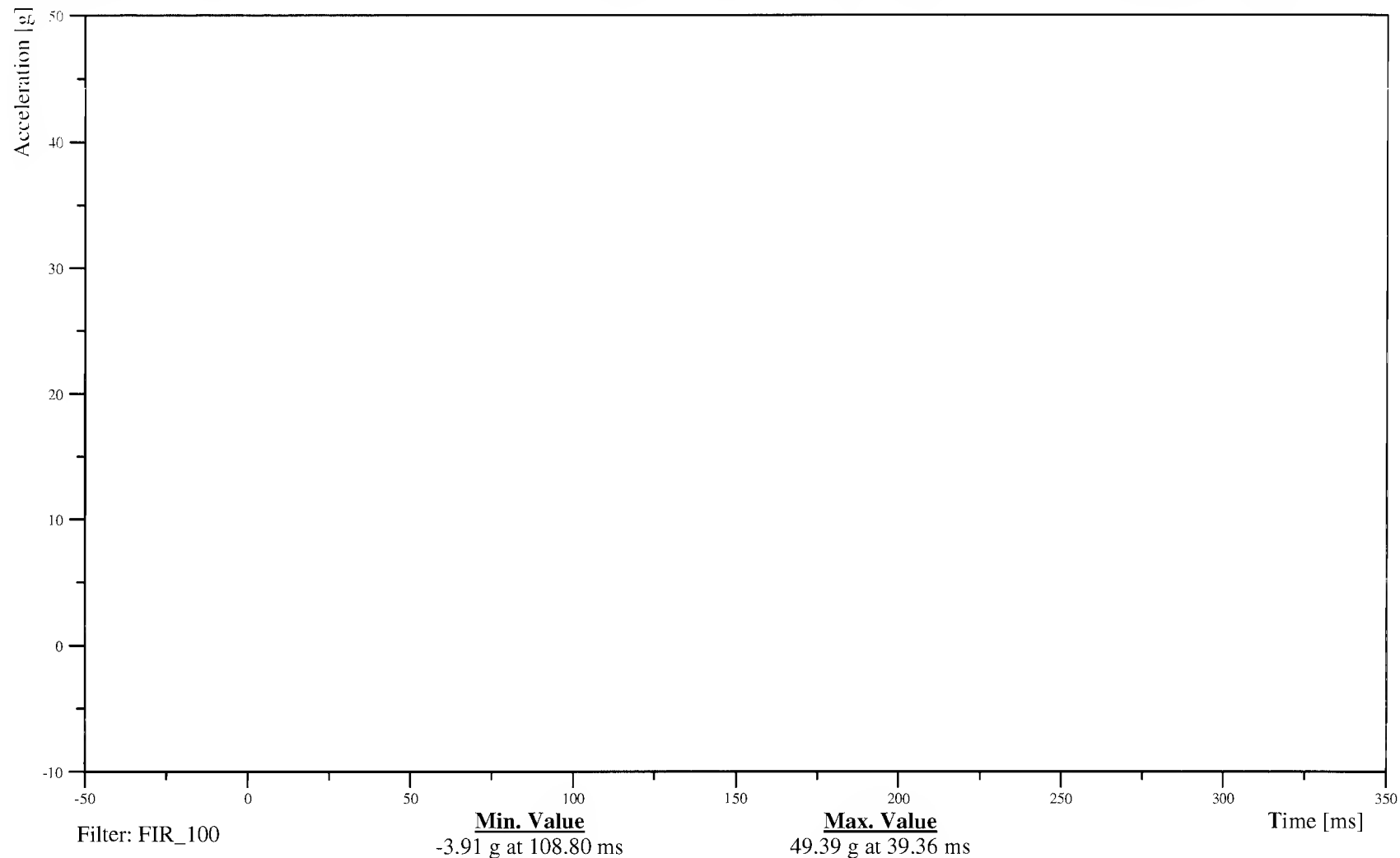
Date: 03/20/2006

Time: 12:01

Customer: NHTSA  
Test Number: C60106

11RIBSLL00SHACY1

TRC Inc. Test Lab: CTF  
Test Number: 060320



B-146

060320

56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

Date: 03/20/2006

DRIVER LOWER SPINE Y-AXIS ACCELERATION

Time: 12:01

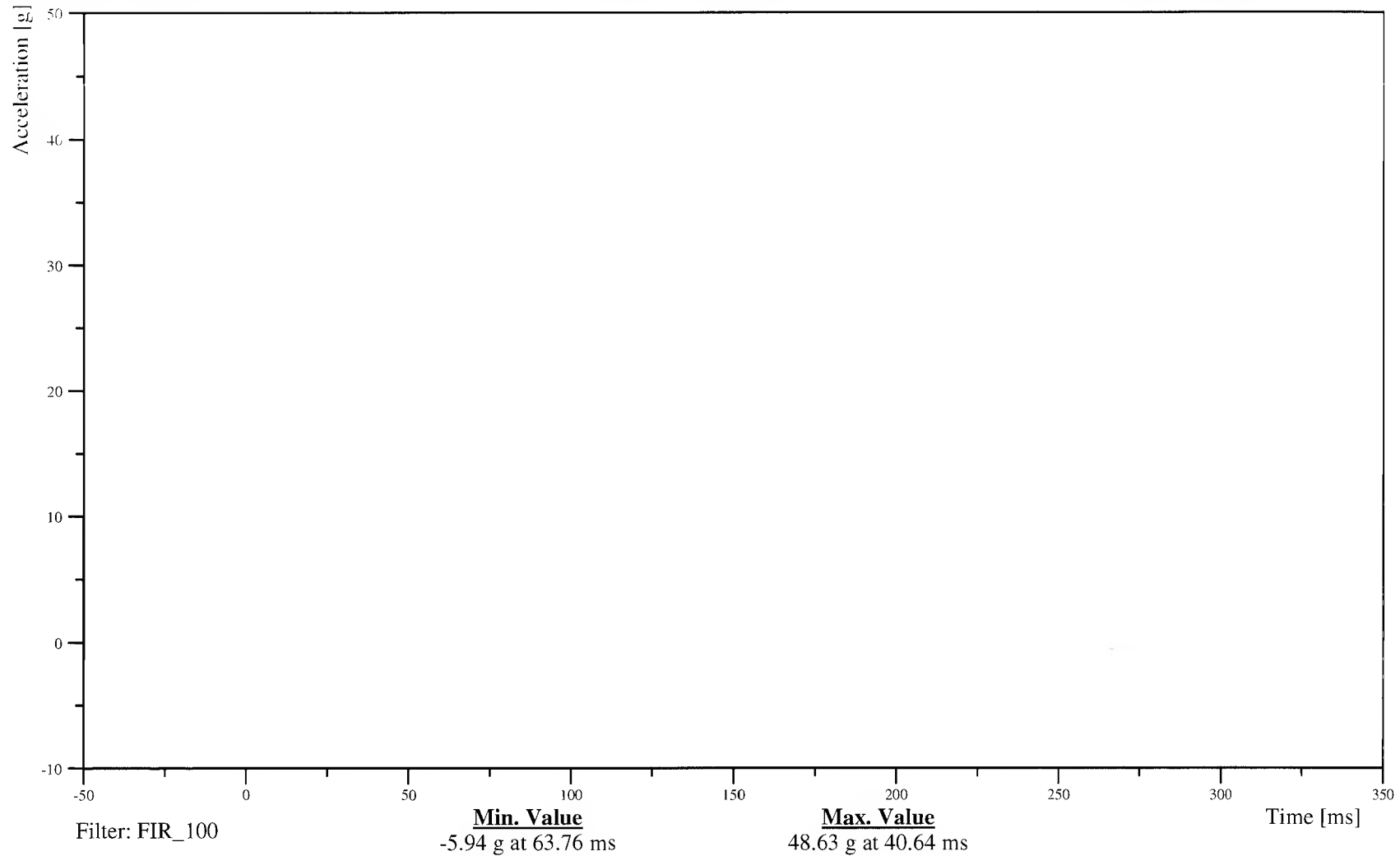
Customer: NHTSA

Test Number: C60106

11SPIN1200SHACY1

TRC Inc. Test Lab: CTF

Test Number: 060320



B-147

060320

56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

Date: 03/20/2006

DRIVER PELVIS Y-AXIS ACCELERATION

Time: 12:01

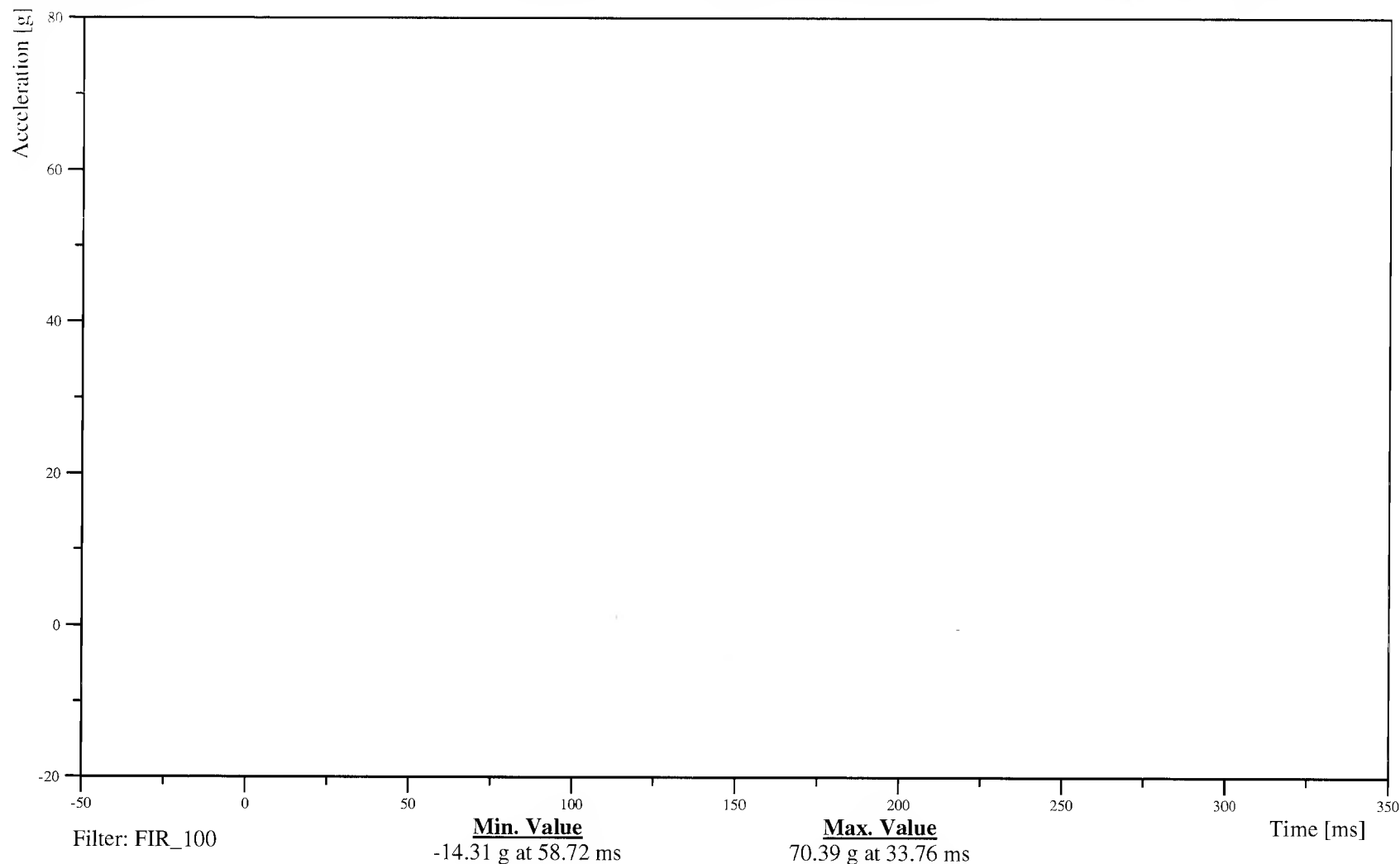
Customer: NHTSA

Test Number: C60106

11PELVCG00SHACY1

TRC Inc. Test Lab: CTF

Test Number: 060320



B-148

060320

56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

Date: 03/20/2006

LEFT REAR PASSENGER UPPER RIB Y-AXIS ACCELERATION

Time: 12:01

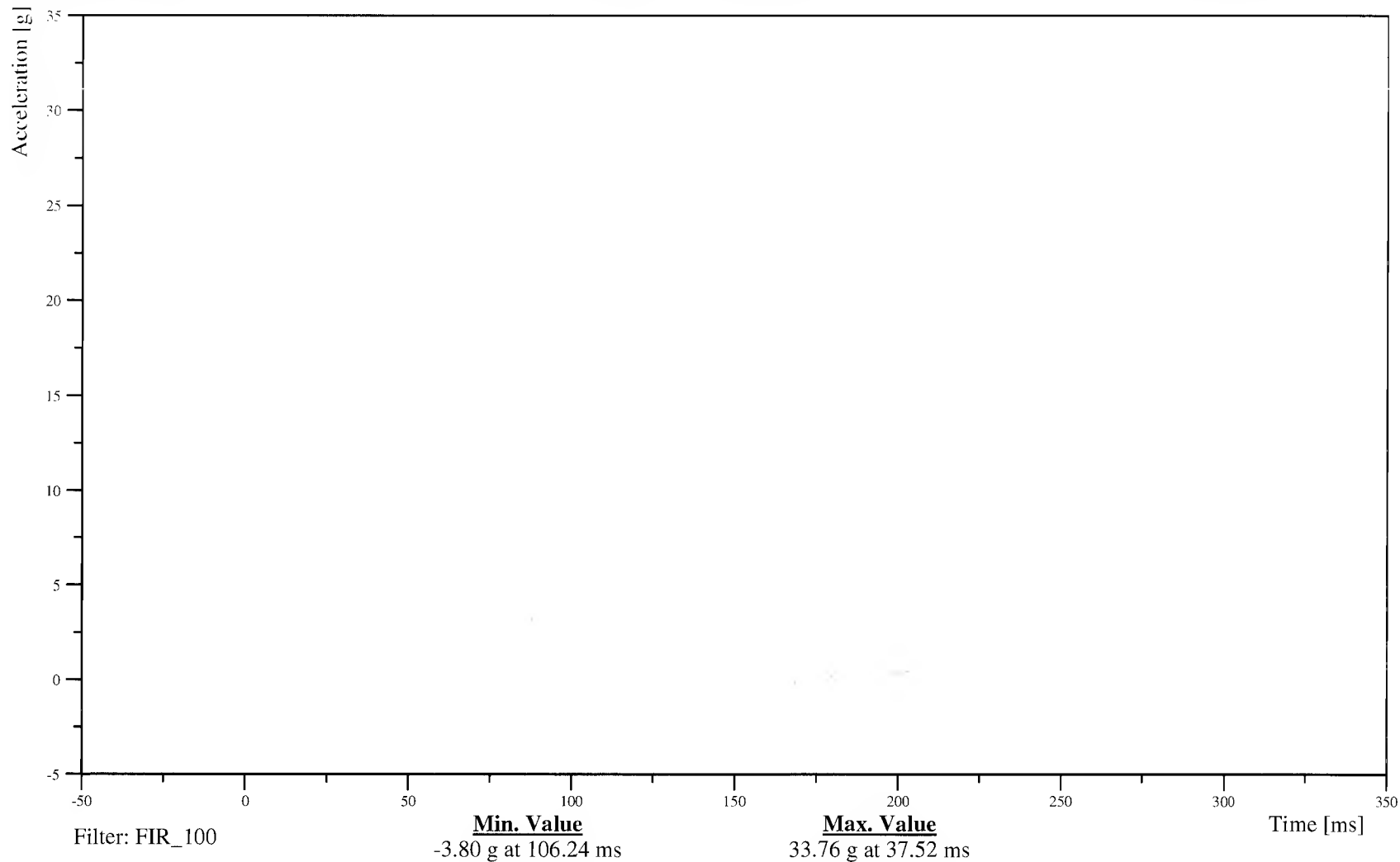
Customer: NHTSA

Test Number: C60106

14RIBSLU00SHACY1

TRC Inc. Test Lab: CTF

Test Number: 060320



B-149

060320

56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

Date: 03/20/2006

LEFT REAR PASSENGER LOWER RIB Y-AXIS ACCELERATION

Time: 12:61

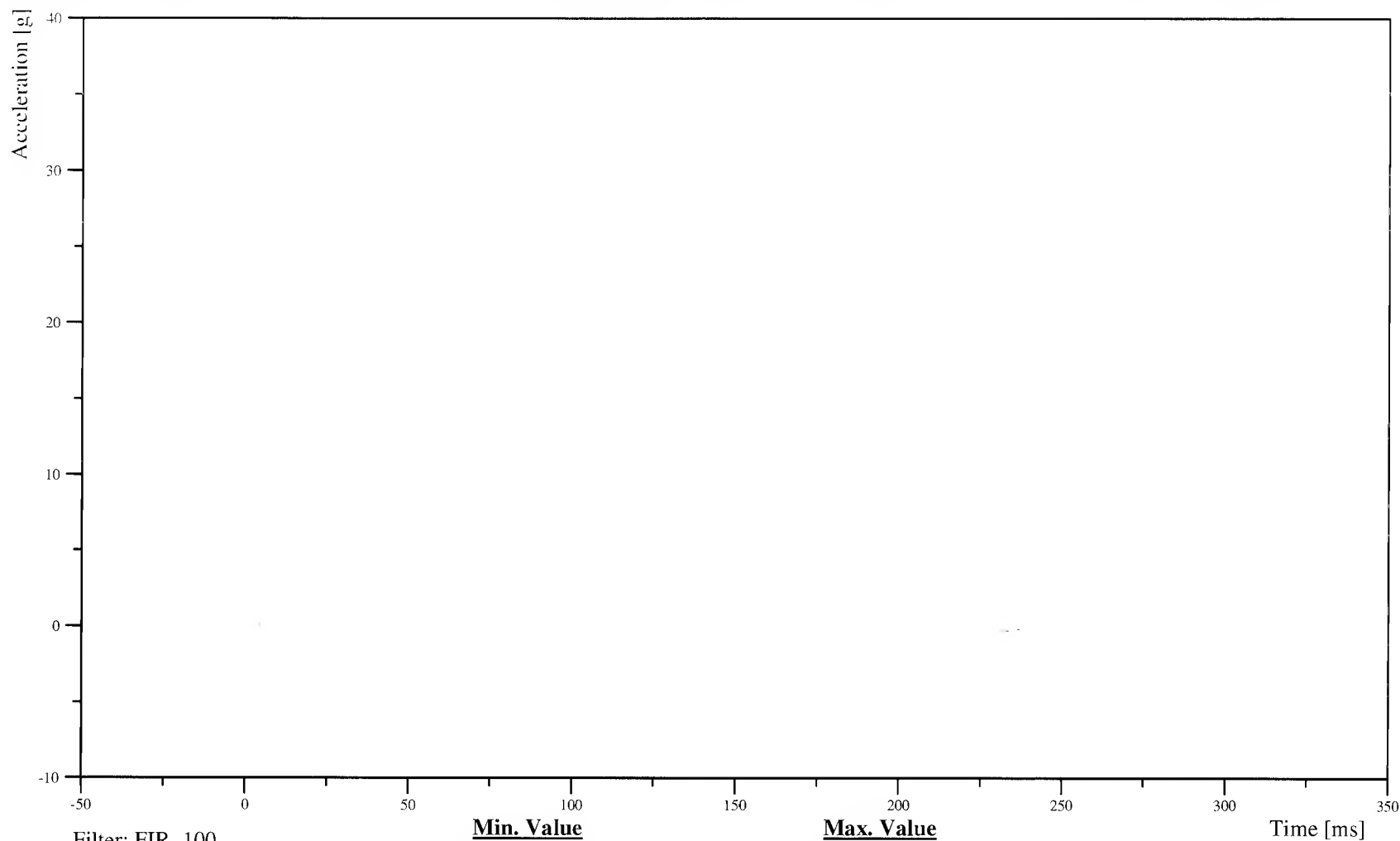
Customer: NHTSA

Test Number: C60106

14RIBSLL00SHACY1

TRC Inc. Test Lab: CTF

Test Number: 060320



B-150

060320

56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

Date: 03/20/2006

LEFT REAR PASSENGER LOWER SPINE Y-AXIS ACCELERATION

Time: 12.01

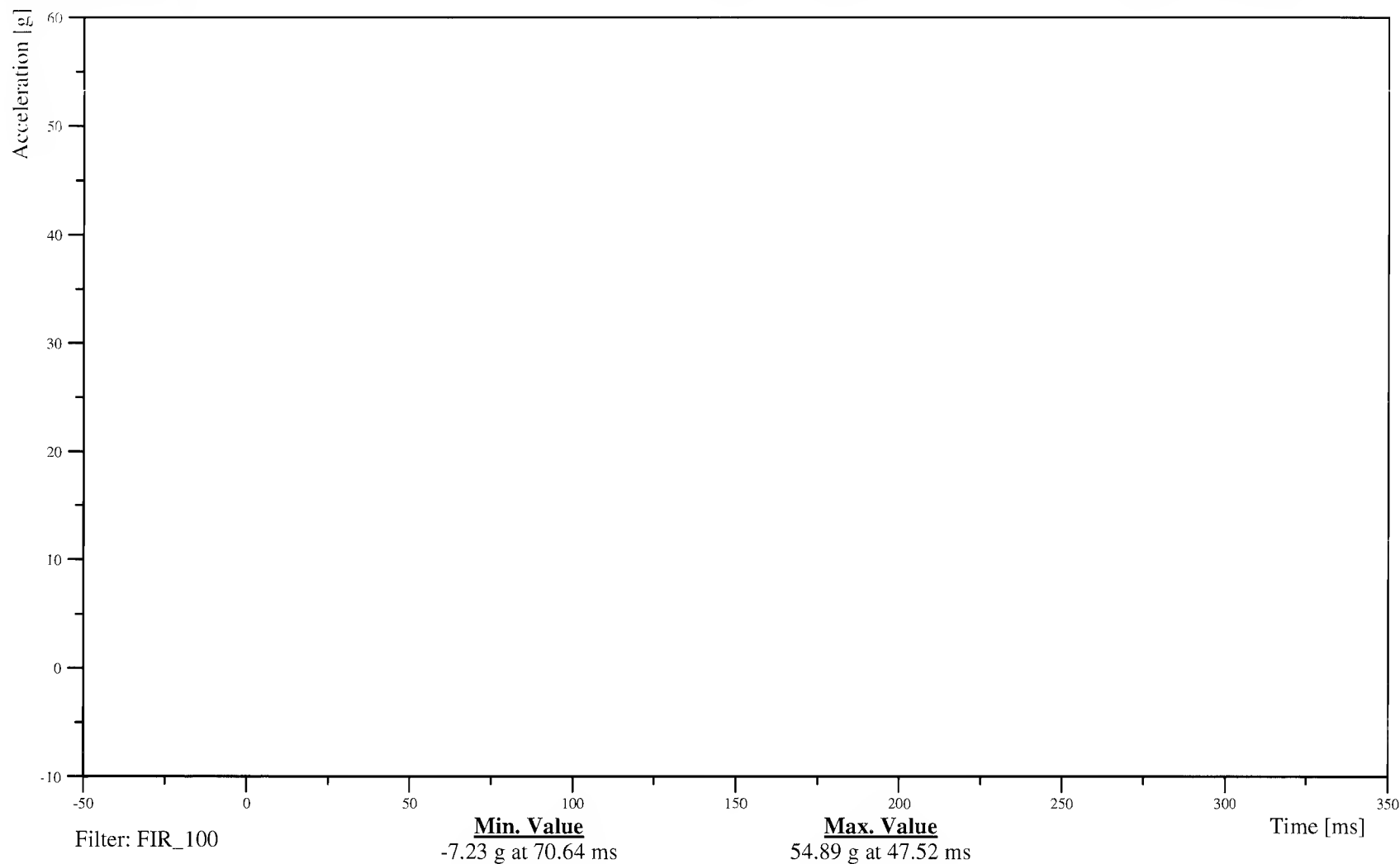
Customer: NHTSA

Test Number: C60106

14SPIN1200SHACY1

TRC Inc. Test Lab: CTF

Test Number: 060320



B-151

060320



56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

Date: 03/20/2006

LEFT REAR PASSENGER PELVIC Y-AXIS ACCELERATION

Time: 12:01

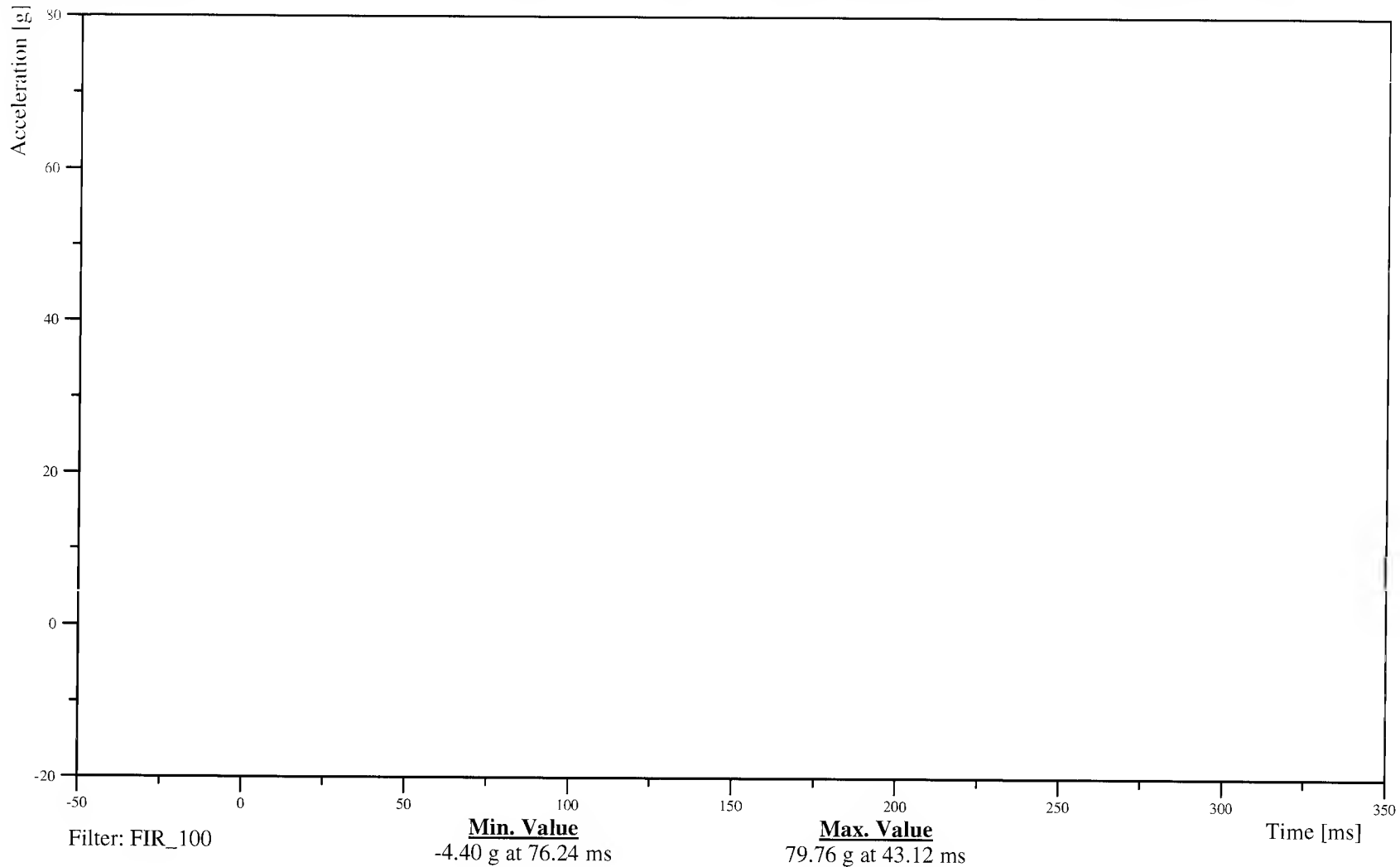
Customer: NHTSA

Test Number: C60106

14PELVCG00SHACY1

TRC Inc. Test Lab: CTF

Test Number: 060320



B-152

060320

Driver and Passenger Dummy Instrumentation Plots  
Acceleration Data - FIR Filtered - Redundant

56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

Date: 03/20/2006

DRIVER UPPER RIB Y-AXIS REDUNDANT ACCELERATION

Time: 12:01

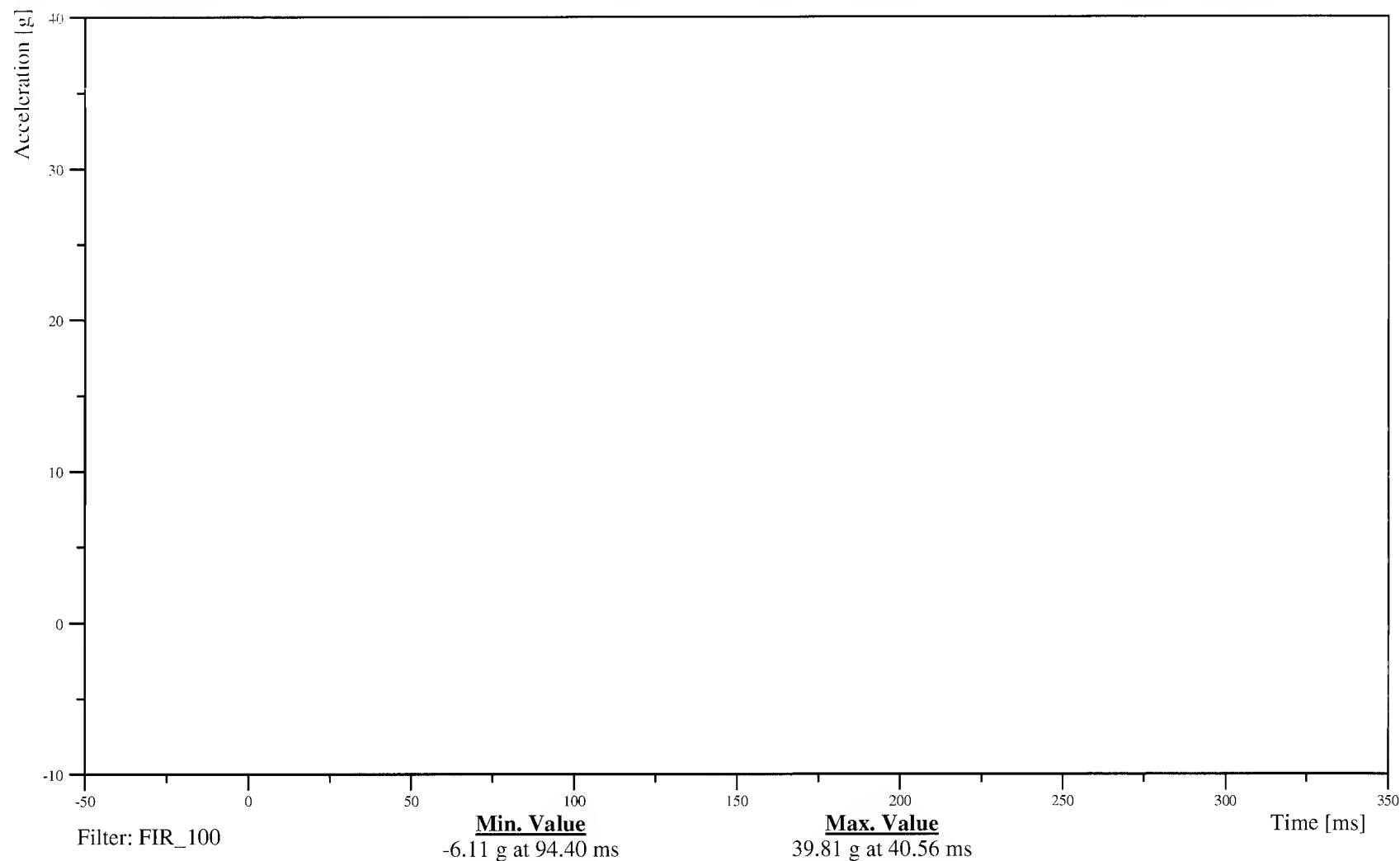
Customer: NHTSA

Test Number: C60106

11RIBSLURESHACY1

TRC Inc. Test Lab: CTF

Test Number: 060320



B-154

060320

56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

Date: 03/20/2006

DRIVER LOWER RIB Y-AXIS REDUNDANT ACCELERATION

Time: 12:01

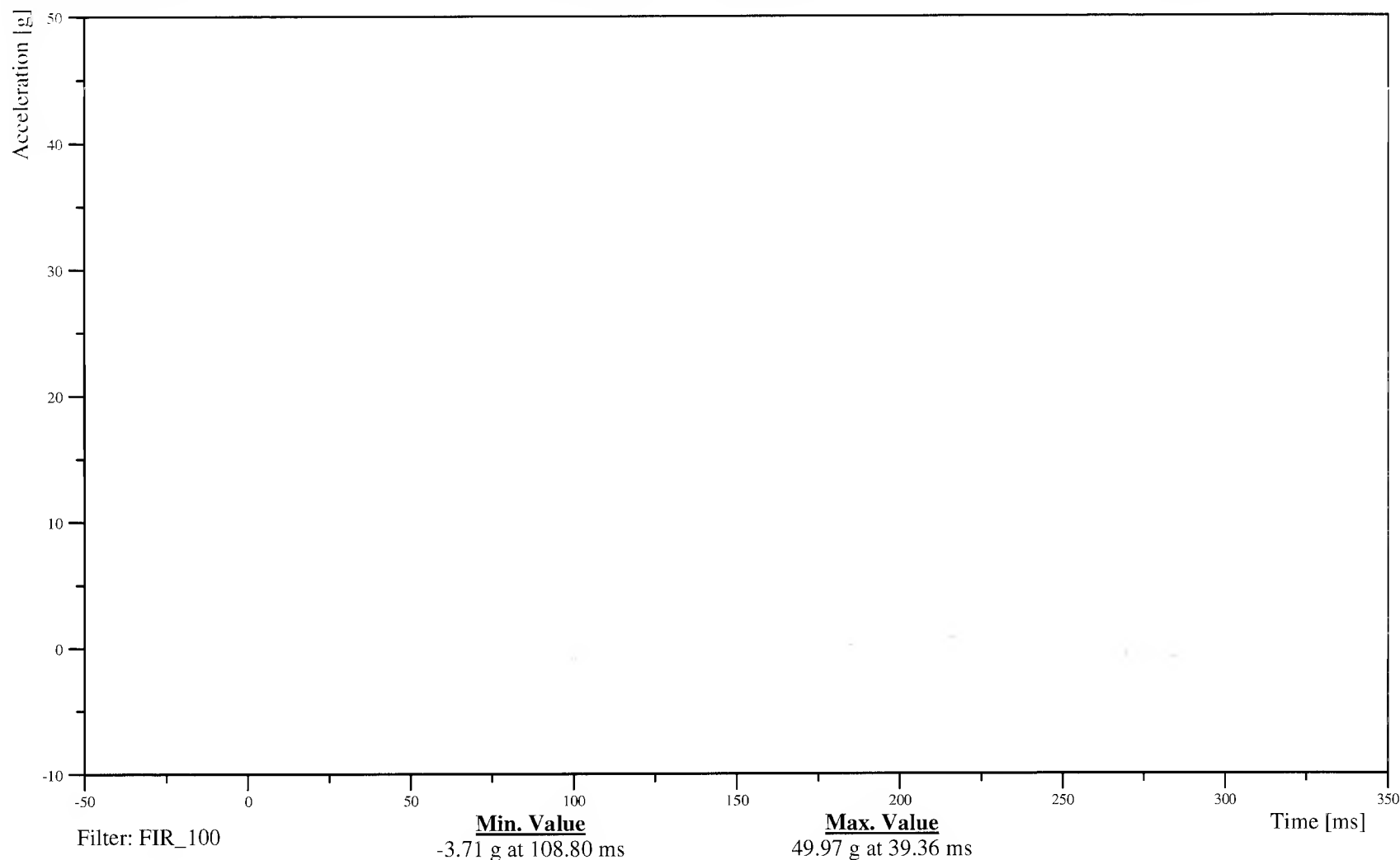
Customer: NHTSA

Test Number: C60106

11RIBSLLRESHACY1

TRC Inc. Test Lab: CTF

Test Number: 060320



B-155

060320

56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

Date: 03/20/2006

Time: 12:01

DRIVER LOWER SPINE Y-AXIS REDUNDANT ACCELERATION

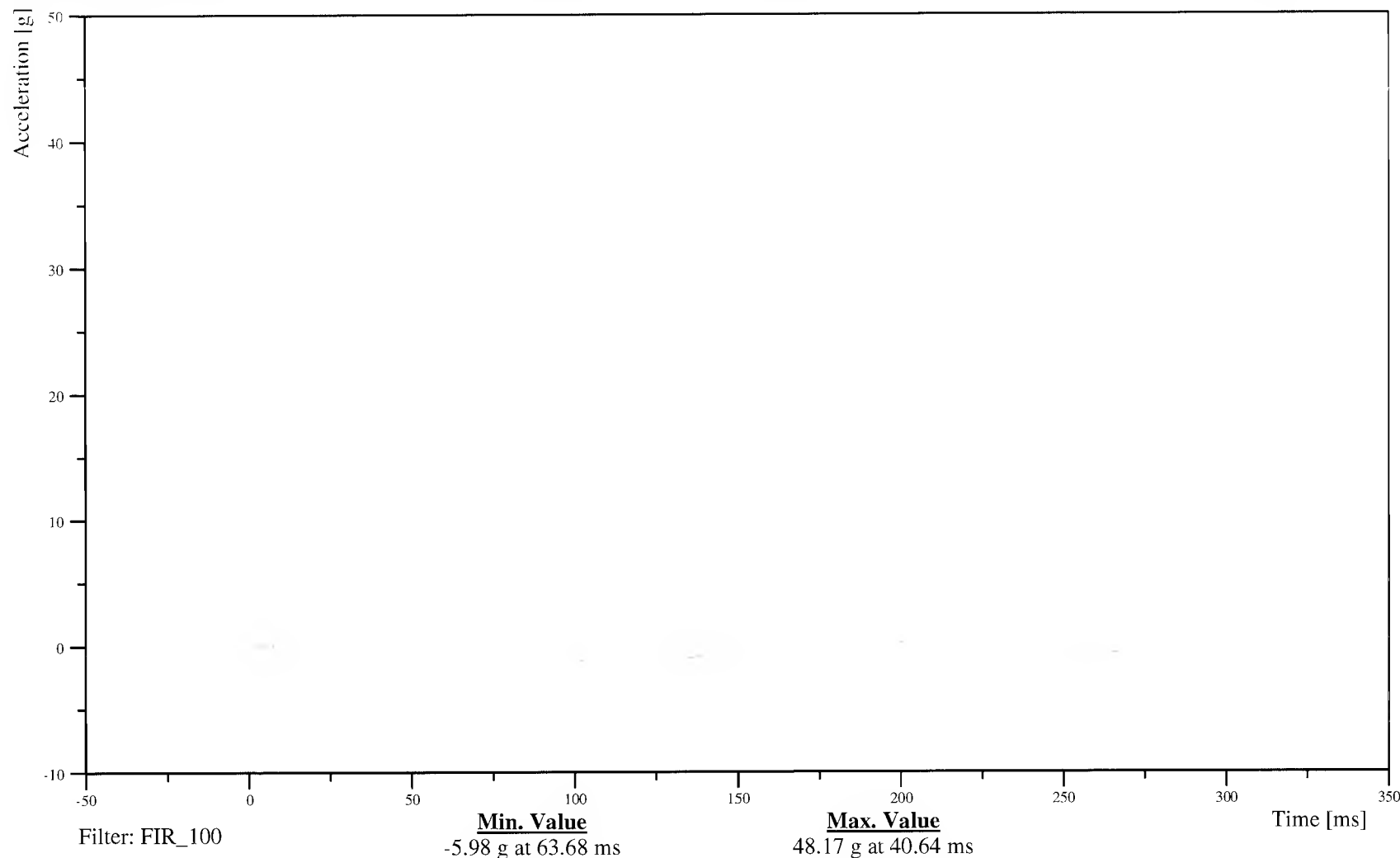
Customer: NHTSA

Test Number: C60106

11SPIN12RDSHACY1

TRC Inc. Test Lab: CTF

Test Number: 060320



B-156

060320

56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

Date: 03/20/2006

Time: 12:01

LEFT REAR PASSENGER UPPER RIB Y-AXIS REDUNDANT ACCELERATION

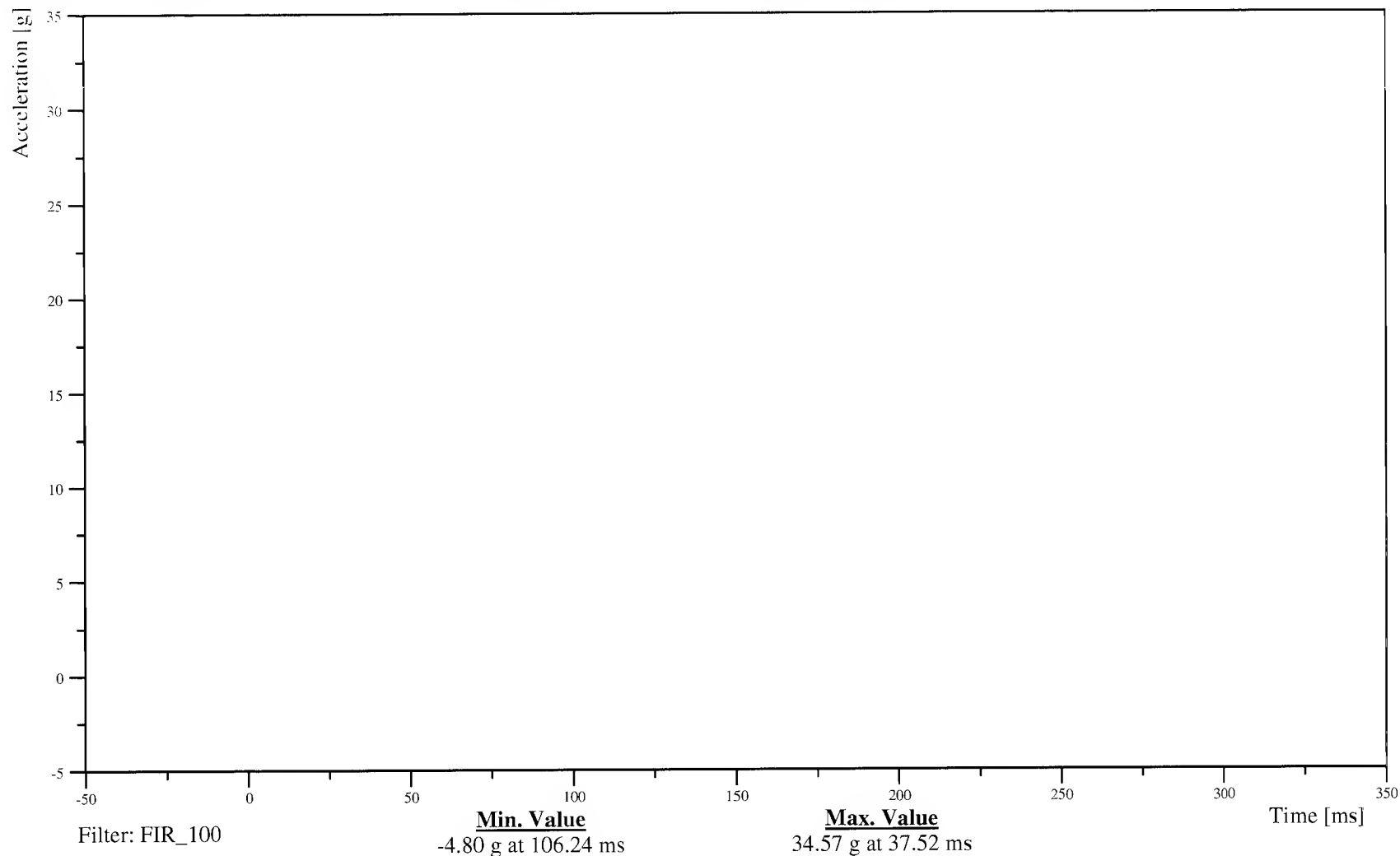
Customer: NHTSA

Test Number: C60106

14RIBSLURESHACY1

TRC Inc. Test Lab: CTF

Test Number: 060320



B-157

060320



56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

Date: 03/20/2006

Time: 12:01

LEFT REAR PASSENGER LOWER RIB Y-AXIS REDUNDANT ACCELERATION

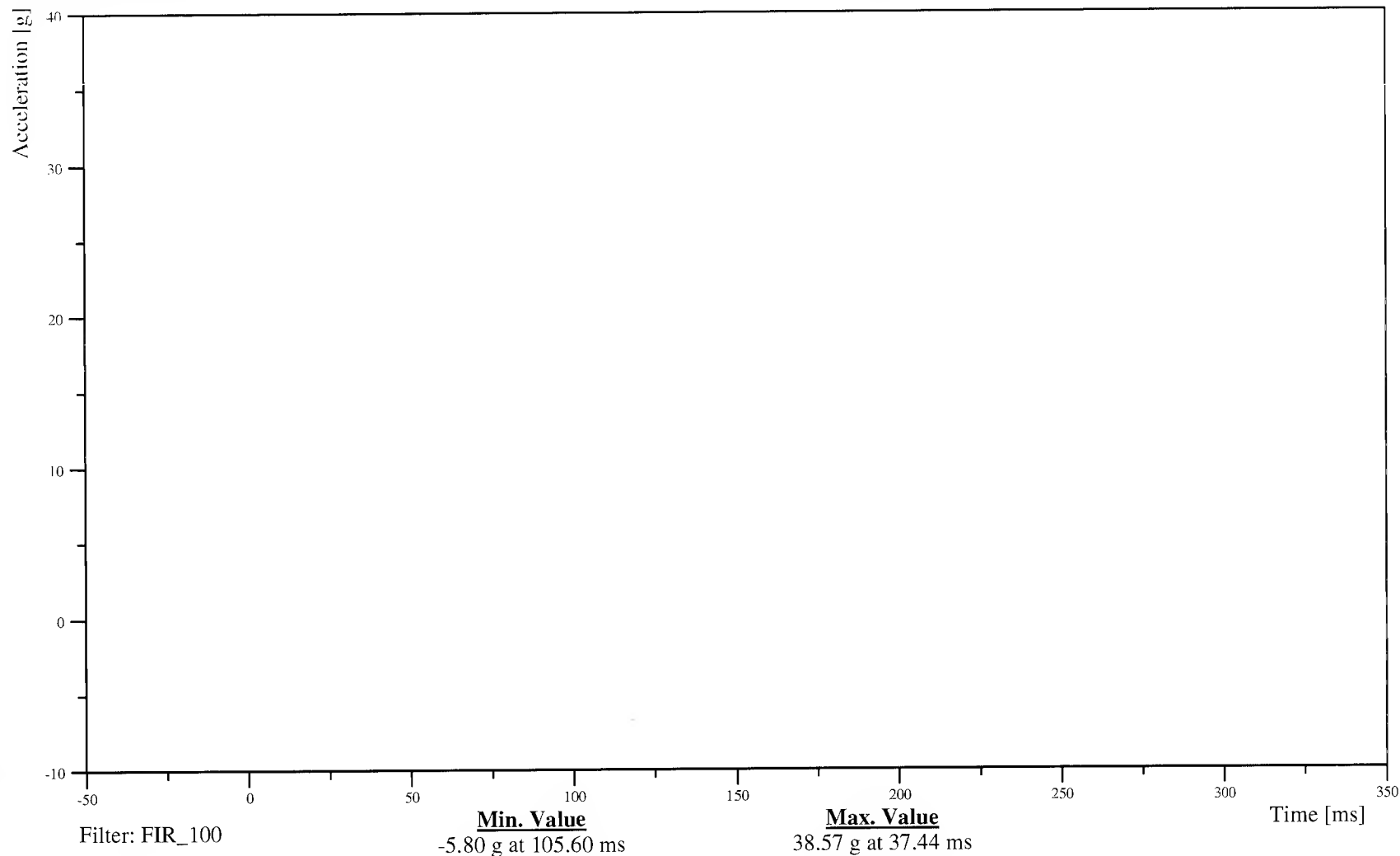
Customer: NHTSA

Test Number: C60106

14RIBSLLRESHACY1

TRC Inc. Test Lab: CTF

Test Number: 060320



B-158

060320

56/28 kph 90 Degree Side Impact (MDB) into Left Side of 2006 Chevrolet HHR

Date: 03/20/2006

LEFT REAR PASSENGER LOWER SPINE Y-AXIS REDUNDANT ACCELERATION

Time: 12:01

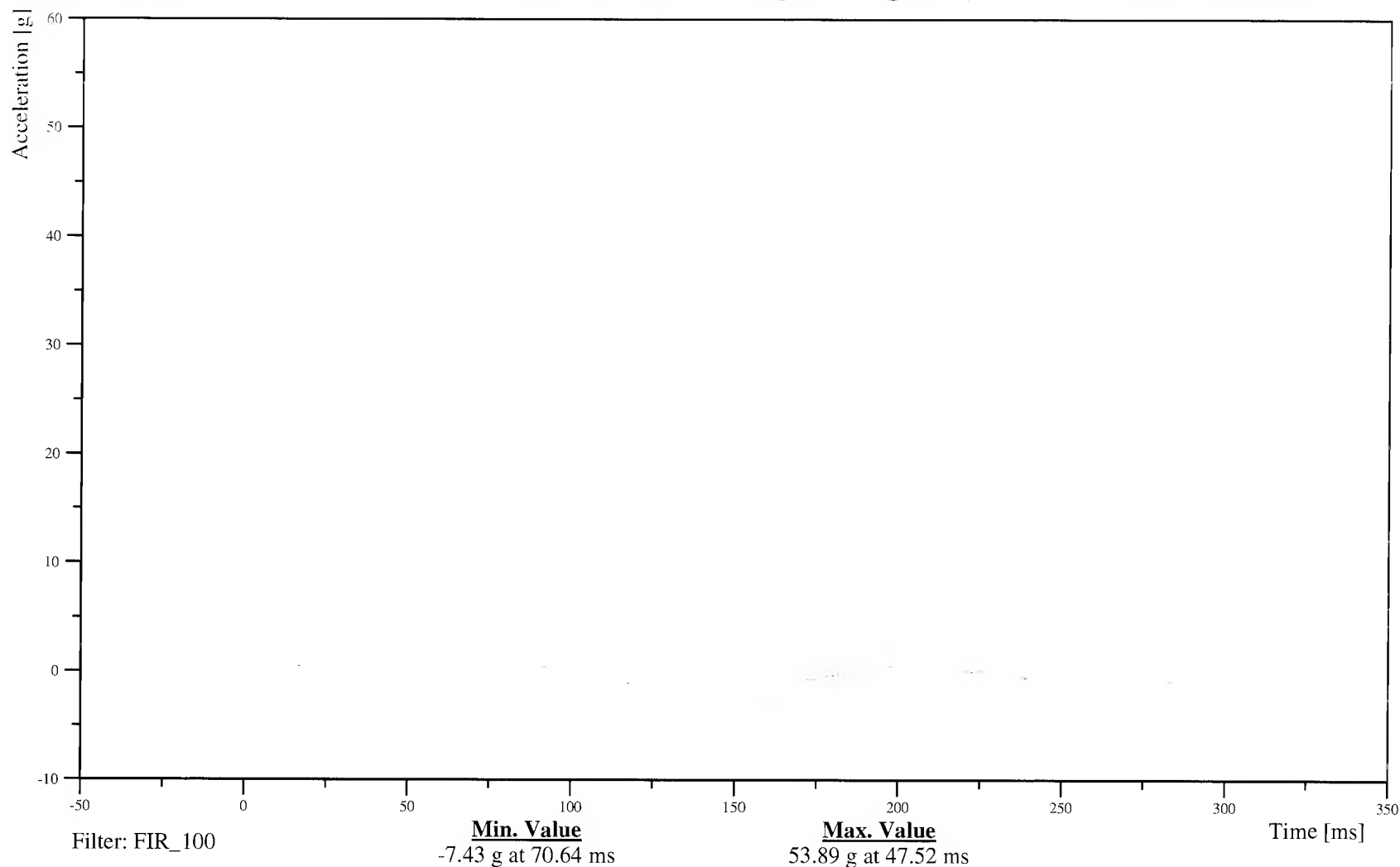
Customer: NHTSA

Test Number: C60106

14SPIN12RDSHACY1

TRC Inc. Test Lab: CTF

Test Number: 060320



B-159

060320

Appendix C

SID Hill Configuration and Performance Verification Data

Summary  
 SID HIII Pre-Test and Post-Test Calibration  
 Configured For Left Side Impact

Date: 03/18/06 - 03/28/06 TRC Inc. Test Number: S/N 055 & S/N 066  
 Laboratory Technician: V. Olivieri & V. Watters

Test Parameter	Specification	SID 055		SID 066	
		Pre-Test	Post-Test	Pre-Test	Post-Test
SH - Seated Height (mm)	889-909	904	905	900	900
RH - Rib Height (mm)	502-520	513	512	510	507
HP - Hip Pivot Height (mm)	99 ref	99.1	99.1	99.1	99.1
KH - Knee Pivot from Back Line (mm)	511-526	521	522	520	522
KV - Knee Pivot to Floor (mm)	490-505	496	495	495	496
HW - Hip Width (mm)	356-391	370	370	373	368
Thorax Impacts					
Temperature (°C)	18.9-25.5	21.5	21.2	21.2	21.5
Relative Humidity (%)	10-70	26	32	26	32
Probe Speed (m/s)	4.27-4.33	4.31	4.29	4.31	4.29
Upper Rib (g's)	37-46	40.7	41.7	46.0	44.5
Lower Rib (g's)	37-46	40.7	40.9	44.3	44.9
Lower Spine (g's)	15-22	19.0	19.5	21.0	21.0
Pelvis Impacts					
Temperature (°C)	18.9-25.5	21.0	21.1	21.5	21.1
Relative Humidity (%)	10-70	27	31	26	32
Probe Speed (m/s)	4.27-4.33	4.30	4.29	4.30	4.30
Pelvis (g's)	40-60	51.8	52.3	42.5	48.0

Calibration Test Results

Pre-Test

SID HIII: 055

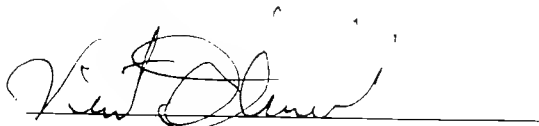
Configured for Left Side Impact

External Dimensions:	The dummy passed all external dimension requirements.
Lateral Thorax Impact Test:	The lateral thorax passed all impact test requirements.
Lumbar Flexion Test:	The dummy met the lumbar flexion test requirements.
Abdominal Compression Test:	The abdomen met the compression test requirements.
Pelvis Impact Test:	The lateral pelvis passed all impact test requirements.
Thoracic Shock Absorber Test:	The thoracic shock absorber passed all test requirements.

**Transportation Research Center Inc.**  
**SID/HIII Dummy**  
**External Dimensions**  
**Serial No. 055 Calibration No. 19**

Test Parameter	Dimension	Specification	Results	Pass
Seated Height	SH	889.0 - 909.3 mm	904 mm	Yes
Rib Height	RH	501.7 - 520.7 mm	513 mm	Yes
Hip Pivot Height	HP	99.1 REF mm	99.1 mm	
Knee Pivot From Backline	KH	510.5 - 525.8 mm	521 mm	Yes
Knee Pivot From Floor	KV	490.2 - 505.5 mm	496 mm	Yes
Hip Width	HW	355.6 - 391.2 mm	370 mm	Yes
Top Rib Width From C/L	RW-1	165.1 - 180.3 mm	172 mm	Yes
Bottom Rib Width From C/L	RW-2	165.1 - 180.3 mm	171 mm	Yes
Difference Between Top & Bottom Rib Width from C/L		<= 2.5 mm	1.0 mm	Yes

Technician



Approved







# Transportation Research Center Inc.

Left Lateral Head Drop

SID-HIII Serial No. 055 Certification No. 19-1

Test Date: 03/17/2006

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.6 °C	21.5 °C	Yes
Relative Humidity	10 - 70 %	31 %	Yes
Peak Head Resultant Acceleration	120 - 150 g	137.9 g	Yes
Peak Head Longitudinal Acceleration	(-15) - 15 g	6.4 g	Yes
Is Head Resultant Acceleration Curve Unimodal Within 15% of Peak?	Yes	Yes	Yes


Test meets specifications.

Comments:

Technician

  
\_\_\_\_\_

Approved

  
\_\_\_\_\_

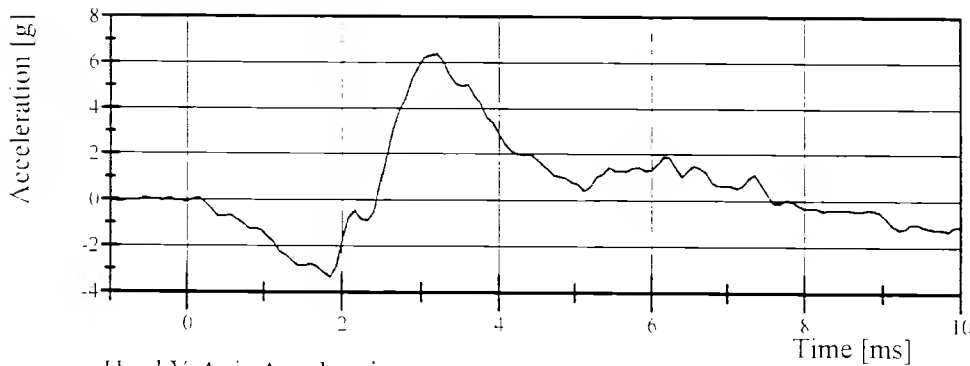
# Transportation Research Center Inc.

Left Lateral Head Drop

SID-HIII Serial No. 055 Certification No. 19-1

Test Date: 03/17/2006

Head X-Axis Acceleration

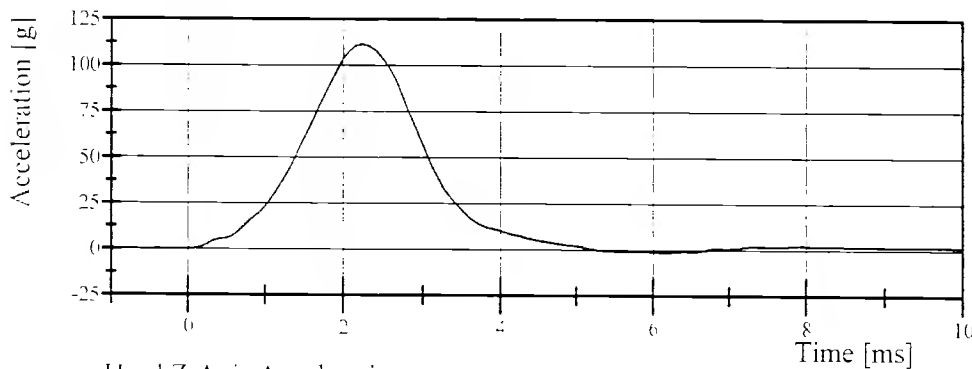


Filter Class: CFC\_1000

Max: 6.4 g at 3.2 ms

Min: -3.3 g at 1.8 ms

Head Y-Axis Acceleration

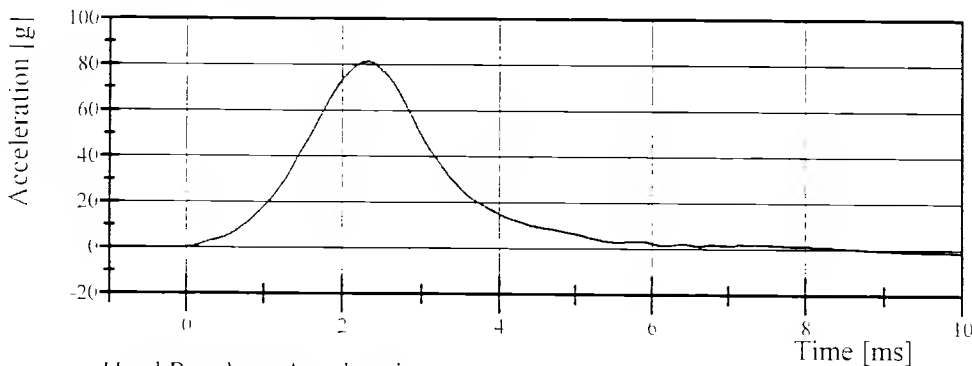


Filter Class: CFC\_1000

Max: 111.6 g at 2.2 ms

Min: -1.5 g at 6.2 ms

Head Z-Axis Acceleration

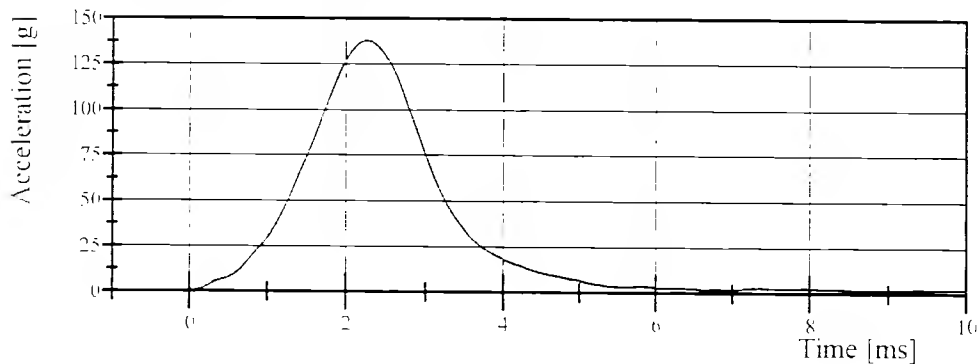


Filter Class: CFC\_1000

Max: 81.6 g at 2.3 ms

Min: -1.4 g at 9.9 ms

Head Resultant Acceleration



Filter Class: CFC\_1000

Max: 137.9 g at 2.2 ms

Min: 0.0 g at -0.3 ms

# Transportation Research Center Inc.

Left Lateral Neck

SID-HIII Serial No. 055 Certification No. 19-1

Test Date: 3/17/2006

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.4 °C	Yes
Relative Humidity	10 - 70 %	31 %	Yes
Pendulum Velocity	(-6.89) - (-7.13) m/s	-7.019 m/s	Yes
Pendulum Integrated Velocity Change at 10 ms	1.96 - 2.55 m/s	2.262 m/s	Yes
Pendulum Integrated Velocity Change at 20 ms	4.12 - 5.10 m/s	4.558 m/s	Yes
Pendulum Integrated Velocity Change at 30 ms	5.73 - 7.01 m/s	6.472 m/s	Yes
Pendulum Integrated Velocity Change at 40 to 70 ms	6.27 - 7.64 m/s	7.256 m/s	Yes
Total Head D-Plane Rotation	(-66) - (-82) °	-70.6 °	Yes
Total Head D-Plane Rotation Time to 0° after Peak Rotation	58 - 67 ms	59.8 ms	Yes
Total Neck Occipital Condyle Moment	73 - 88 N·m	82.7 N·m	Yes
Total Neck Occipital Condyle Moment Time to 0 N·m after Peak Moment	49 - 64 ms	53.7 ms	Yes
Time from Peak Moment to Peak Rotation	2 - 16 ms	8.8 ms	Yes

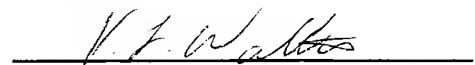
**Test meets specifications.**

**Comments:**

Technician



Approved

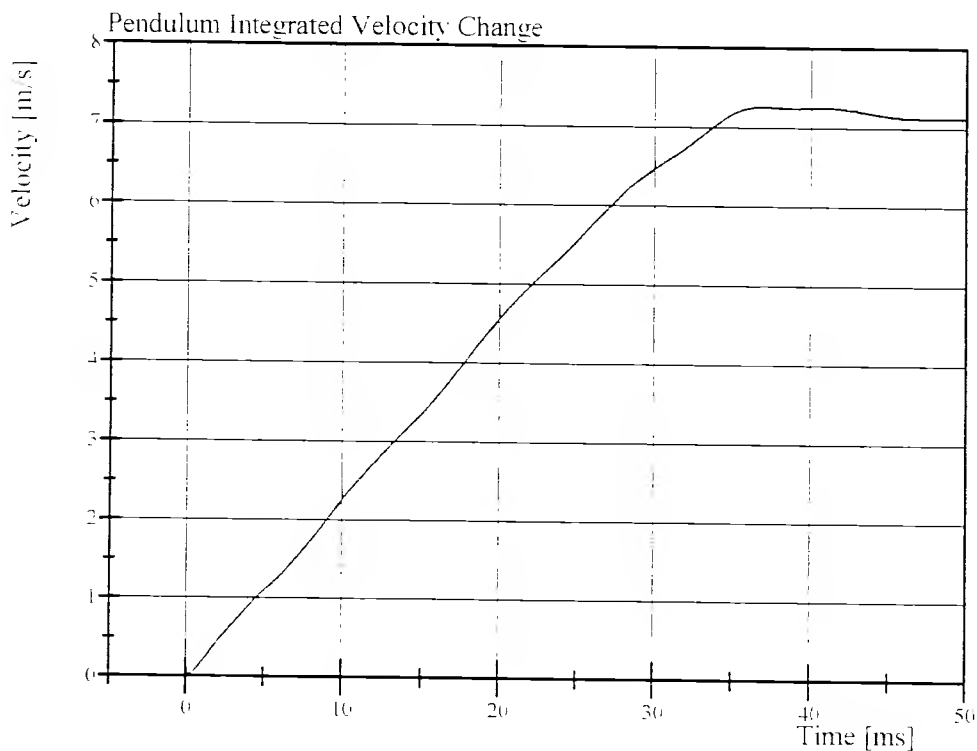
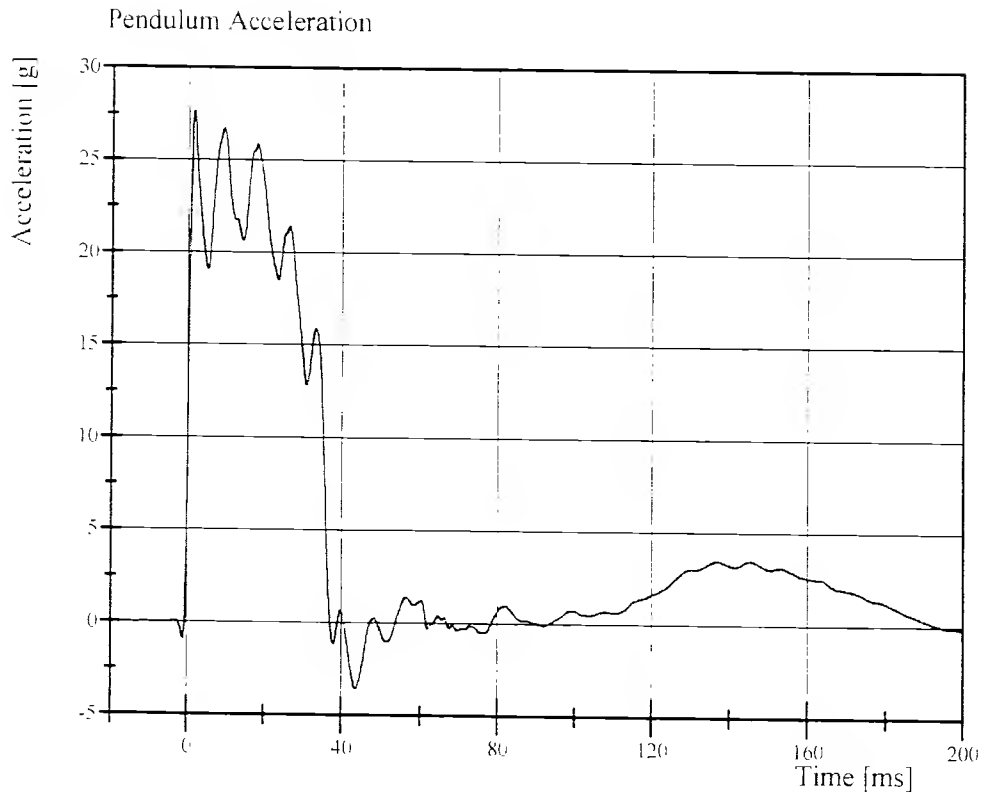


# Transportation Research Center Inc.

Left Lateral Neck

SID-HIII Serial No. 055 Certification No. 19-1

Test Date: 3/17/2006



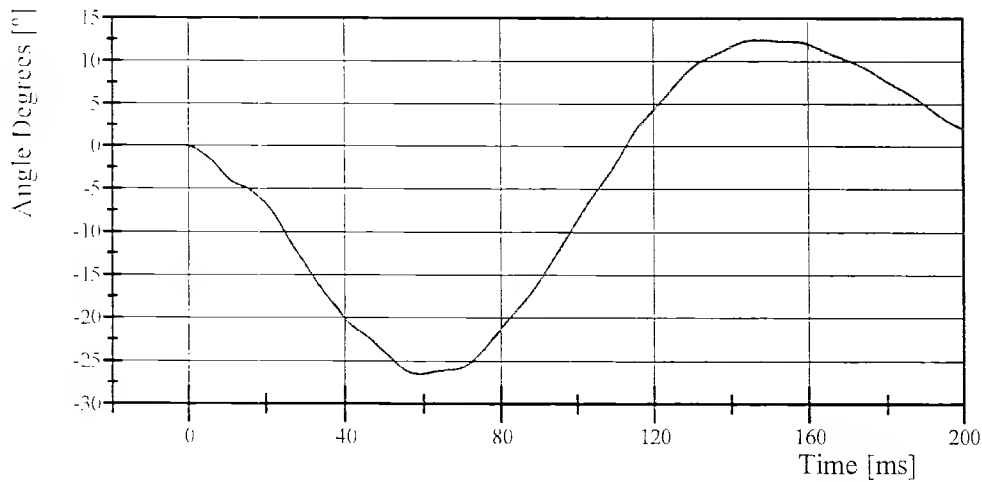
# Transportation Research Center Inc.

Left Lateral Neck

SID-HIII Serial No. 055 Certification No. 19-1

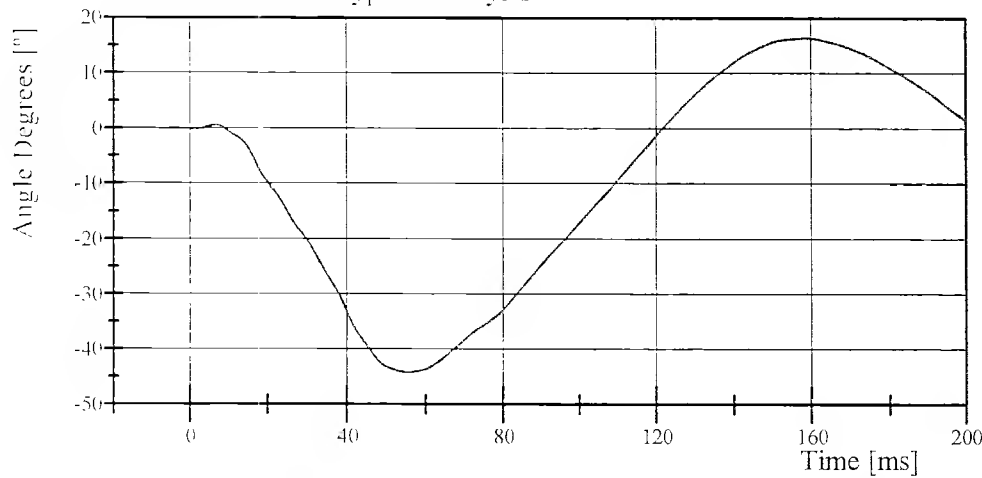
Test Date: 3/17/2006

Pot Rotation at the Base of Neck



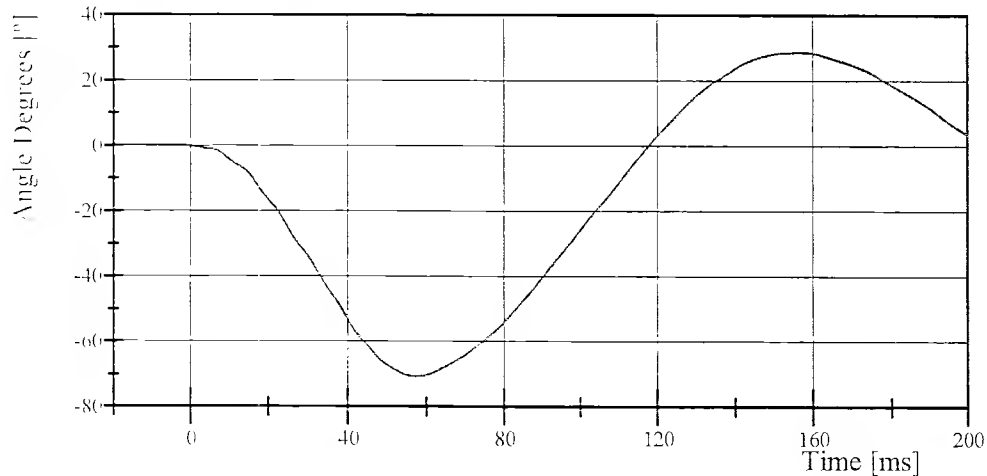
Filter Class: CFC\_60  
Max: 12.5 ° at 147.2 ms  
Min: -26.6 ° at 59.1 ms

Head Rotation at Occypital Condyles



Filter Class: CFC\_60  
Max: 16.4 ° at 158.7 ms  
Min: -44.2 ° at 55.1 ms

Total Head D-Plane Rotation



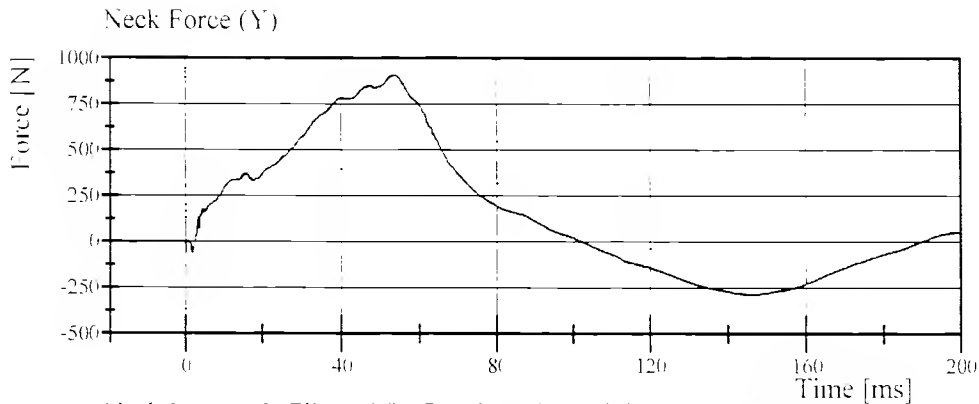
Filter Class: CFC\_60  
Max: 28.6 ° at 157.1 ms  
Min: -70.6 ° at 57.9 ms

# Transportation Research Center Inc.

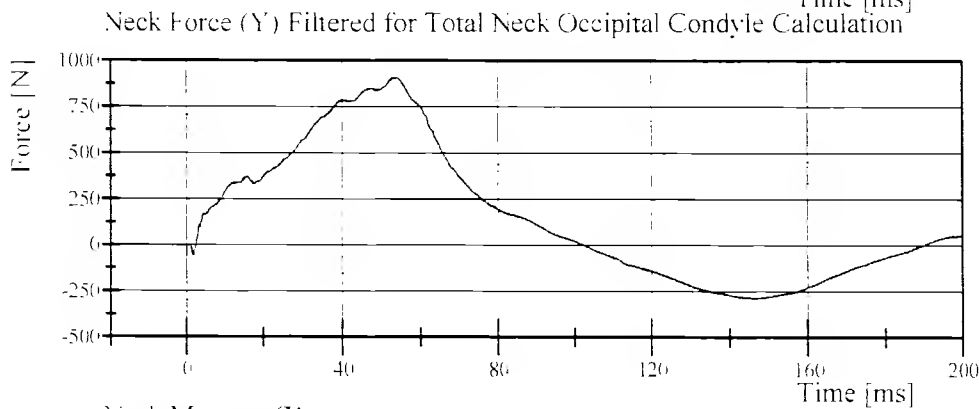
Left Lateral Neck

SID-HIII Serial No. 055 Certification No. 19-1

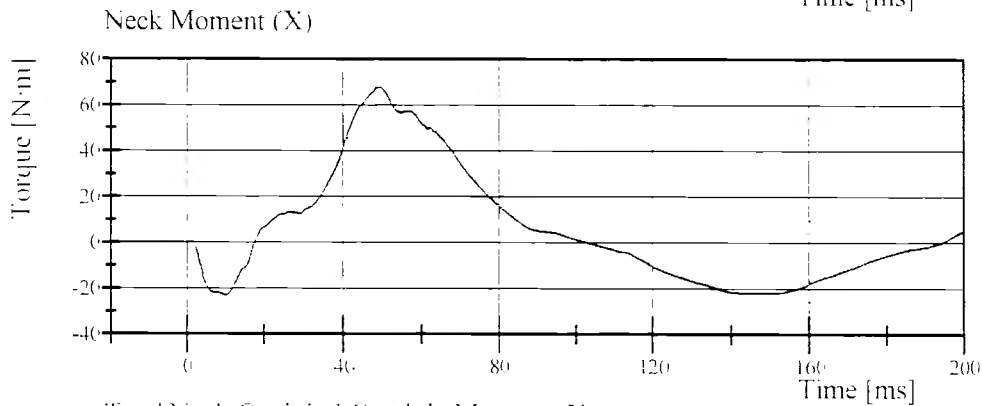
Test Date: 3/17/2006



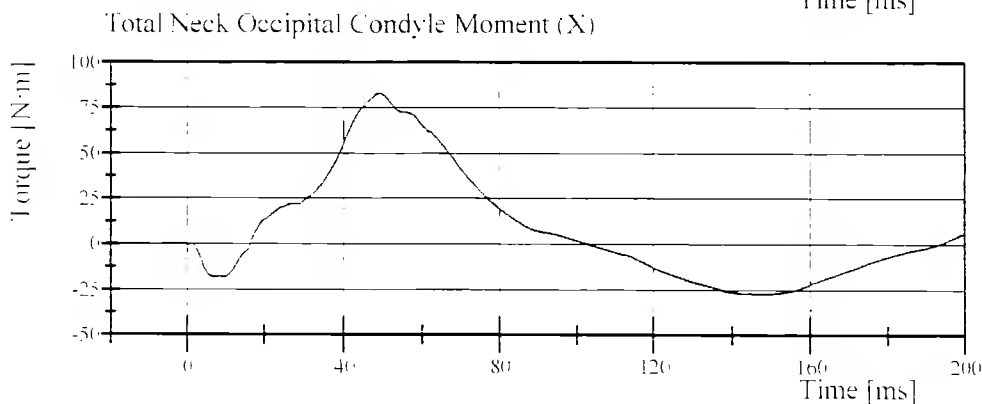
Filter Class: CFC\_1000  
Max: 907.5 N at 53.8 ms  
Min: -288.6 N at 145.8 ms



Filter Class: CFC\_600  
Max: 907.3 N at 53.8 ms  
Min: -288.4 N at 145.9 ms



Filter Class: CFC\_600  
Max: 67.8 N·m at 49.0 ms  
Min: -23.1 N·m at 10.1 ms



Filter Class: CFC\_600  
Max: 82.7 N·m at 49.1 ms  
Min: -27.2 N·m at 147.7 ms

# Transportation Research Center Inc.

3.05 m/s Thoracic Shock Absorber Compression

SID-HIII Serial No. 055 Certification No. 19-1

Test Date: 03/17/2006

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.5 °C	21.1 °C	Yes
Relative Humidity	10 - 70 %	31 %	Yes
Maximum Force at Test Velocity	855 - 1,144 N	973.8 N	Yes
Maximum Displacement at Test Velocity	30.2 - 35.19 mm	31.291 mm	Yes

**Test meets specifications.**

## Comments:

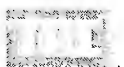
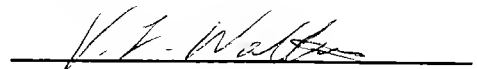
Actual Impactor Velocity (m/s): 3.074

Damper Setting: 9.0

Technician



Approved





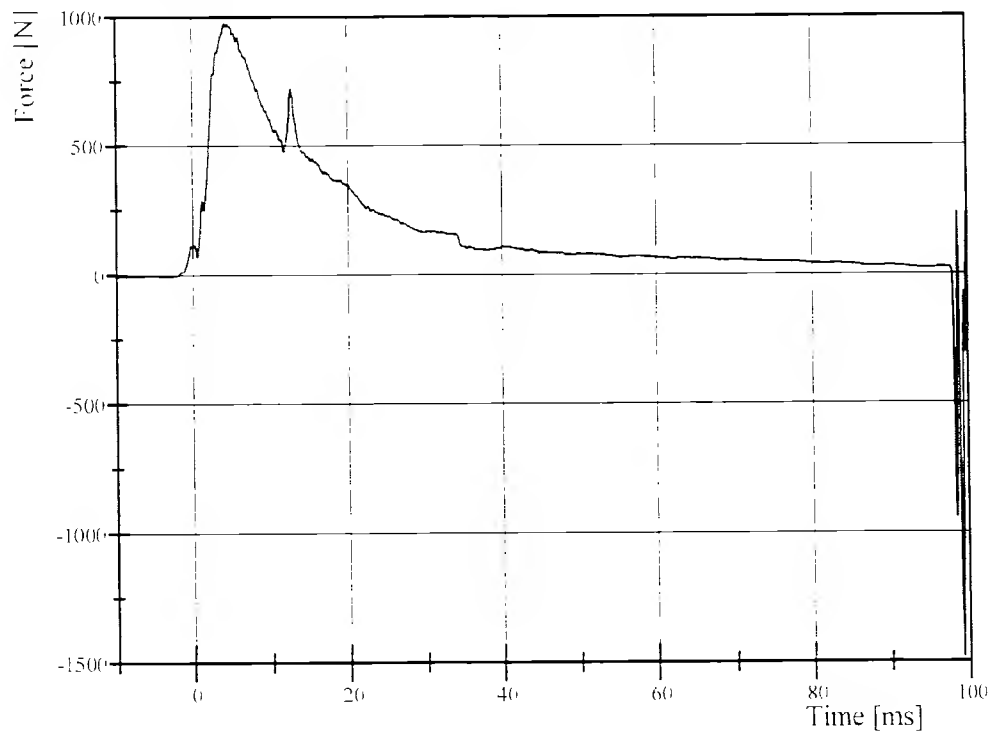
# Transportation Research Center Inc.

3.05 m/s Thoracic Shock Absorber Compression

SID-HIII Serial No. 055 Certification No. 19-1

Test Date: 03/17/2006

Shock Absorber Resistive Force

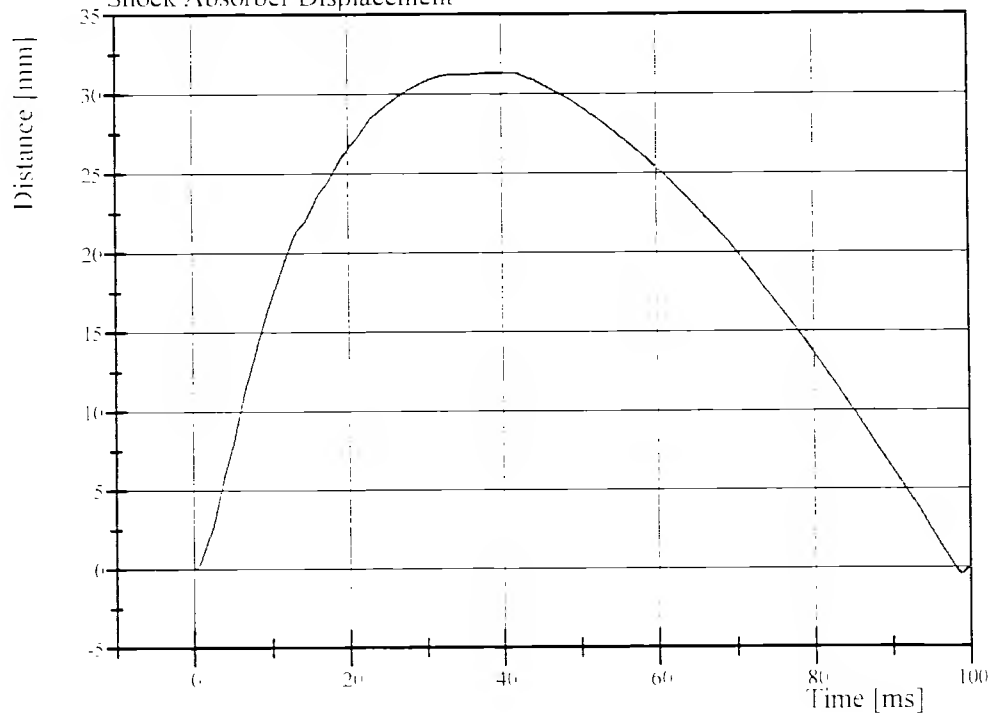


Filter Class: CFC\_1000

Max: 973.8 N at 4.2 ms

Min: -1.481.2 N at 99.1 ms

Shock Absorber Displacement



Filter Class: CFC\_1000

Max: 31.3 mm at 40.6 ms

Min: -0.4 mm at 98.8 ms

# Transportation Research Center Inc.

4.27 m/s Thoracic Shock Absorber Compression

SID-HIII Serial No. 055 Certification No. 19-1

Test Date: 03/17/2006

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.5 °C	21.3 °C	Yes
Relative Humidity	10 - 70 %	31 %	Yes
Maximum Force at Test Velocity	1,758 - 2,125 N	1,944.0 N	Yes
Maximum Displacement at Test Velocity	31.71 - 37.26 mm	34.448 mm	Yes

**Test meets specifications.**

**Comments:**

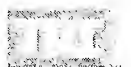
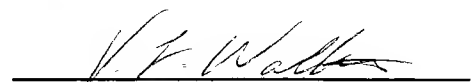
Actual Impactor Velocity (m/s): 4.294

Damper Setting: 9.0

Technician



Approved

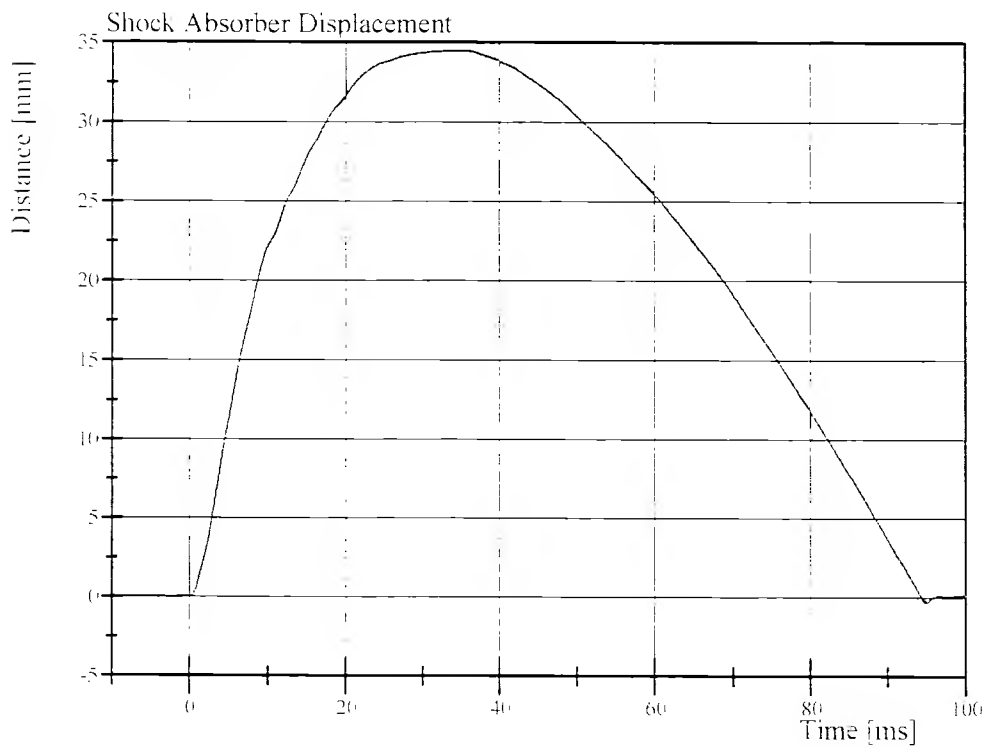
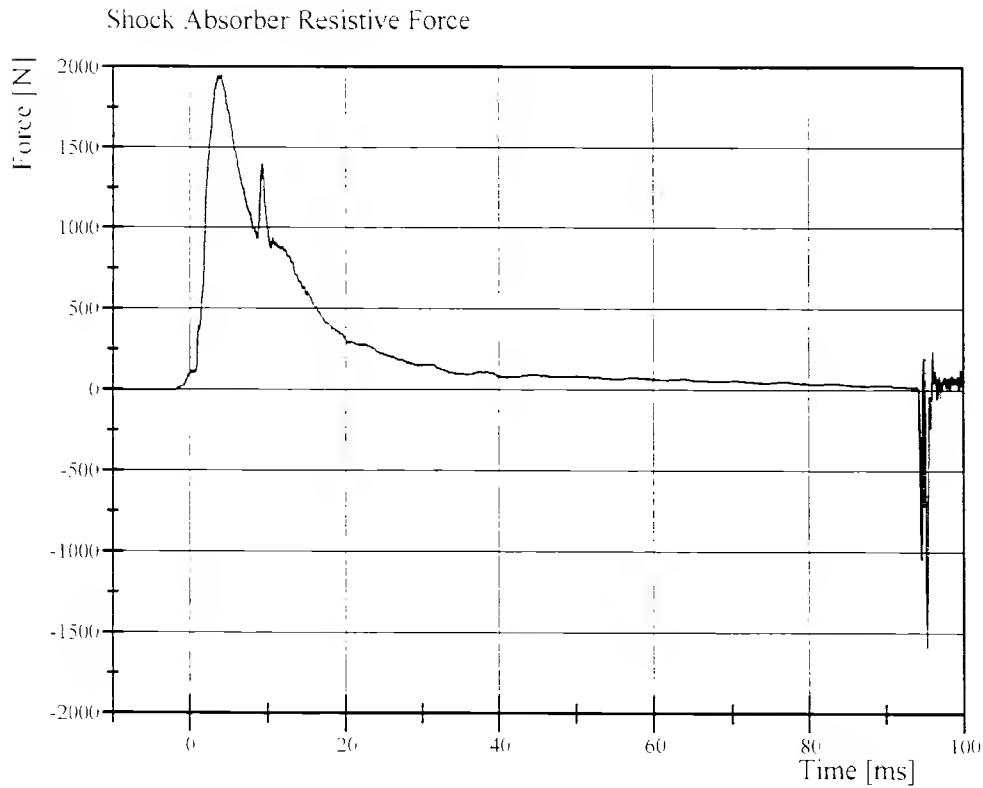


# Transportation Research Center Inc.

4.27 m/s Thoracic Shock Absorber Compression

SID-HIII Serial No. 055 Certification No. 19-1

Test Date: 03/17/2006



# Transportation Research Center Inc.

6.10 m/s Thoracic Shock Absorber Compression

SID-HIII Serial No. 055 Certification No. 19-1

Test Date: 03/17/2006

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.5 °C	21.3 °C	Yes
Relative Humidity	10 - 70 %	31 %	Yes
Maximum Force at Test Velocity	3,740 - 4,434 N	4,431.3 N	Yes
Maximum Displacement at Test Velocity	33.36 - 39.56 mm	36.343 mm	Yes

**Test meets specifications.**

**Comments:**

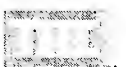
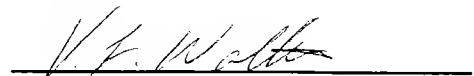
Actual Impactor Velocity (m/s): 6.093

Damper Setting: 9.0

Technician



Approved



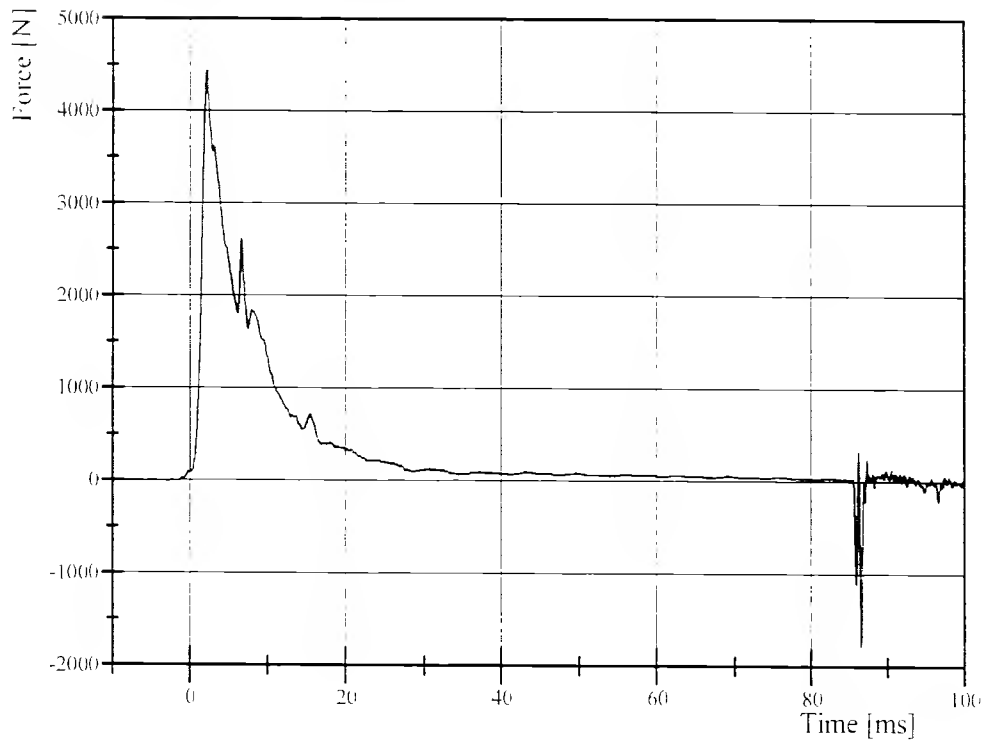
# Transportation Research Center Inc.

6.10 m/s Thoracic Shock Absorber Compression

SID-HIII Serial No. 055 Certification No. 19-1

Test Date: 03/17/2006

Shock Absorber Resistive Force

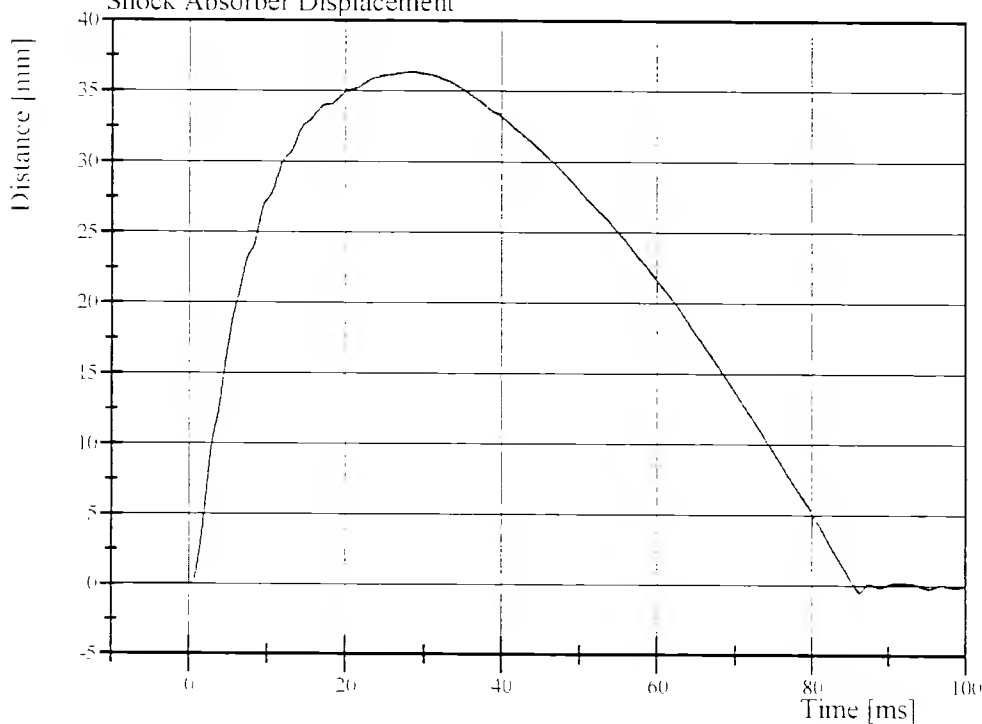


Filter Class: CFC\_1000

Max: 4.431.3 N at 2.2 ms

Min: -1.776.8 N at 86.5 ms

Shock Absorber Displacement



Filter Class: CFC\_1000

Max: 36.3 mm at 28.2 ms

Min: -0.5 mm at 86.2 ms

TRANSPORTATION RESEARCH CENTER INC.

PART 572B LUMBAR FLEXION TEST

SID/HIII

CAL DATE: 17-Mar-03

TRC, INC.

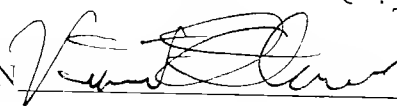
TEST NO: 055C19TF1

572M SN 055 TORSO FLEX CAL 19

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9 – 25.6° C	21.1°C
RELATIVE HUMIDITY	10 – 70 %	30 %
FORCE AT 0 DEG. FLEXION	-27 – 27 N	0 N
FORCE AT 20 DEG OF FLEXION	98 – 151 N	124.6 N
FORCE AT 30 DEG OF FLEXION	151 – 205 N	186.8 N
FORCE AT 40 DEG OF FLEXION	205 – 258 N	240.2 N
NET RETURN ANGLE AFTER 3 MINUTES	< 12 °	4.4 °

TEST MEETS SPECIFICATIONS

TECHNICIAN



# Transportation Research Center Inc.

Abdomen Compression

SID-HIII Serial No. 055 Certification No. 19-5

Test Date: 03/17/2006

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.5 °C	21.1 °C	Yes
Relative Humidity	10 - 70 %	32 %	Yes
Probe Force within Corridor	Yes	Yes	Yes
Probe Velocity	6.35 - 8.89 mm/s	7.887 mm/s	Yes

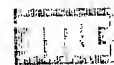
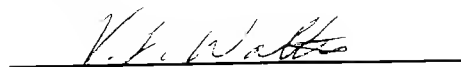
Test meets specifications.

Comments:

Technician



Approved



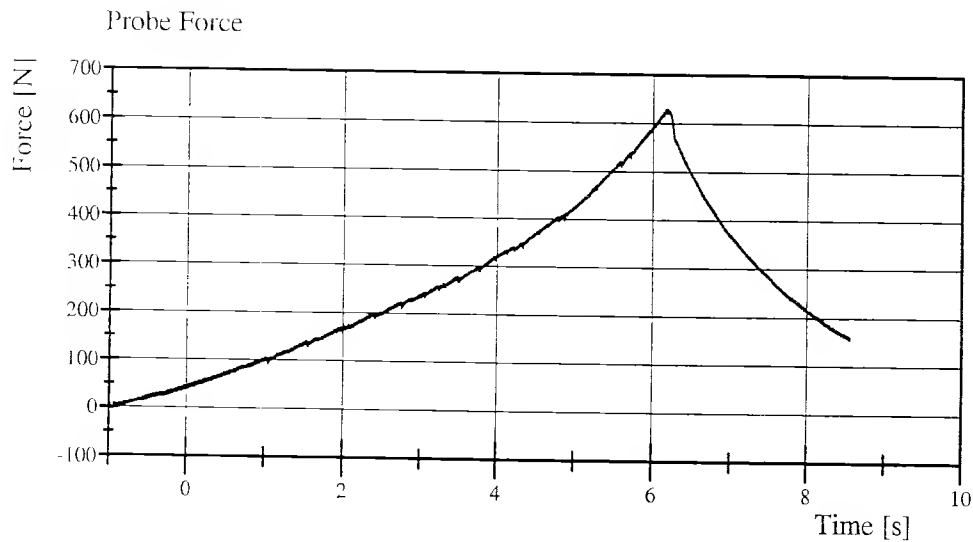


# Transportation Research Center Inc.

Abdomen Compression

SID-HH11 Serial No. 055 Certification No. 19-5

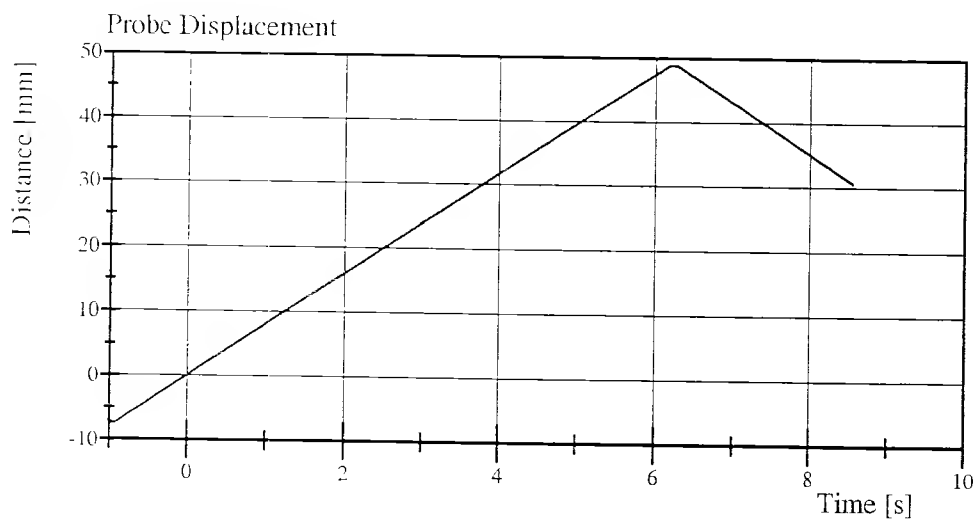
Test Date: 03/17/2006



Filter Class: CFC\_600

Max: 629.6 N at 6.2 s

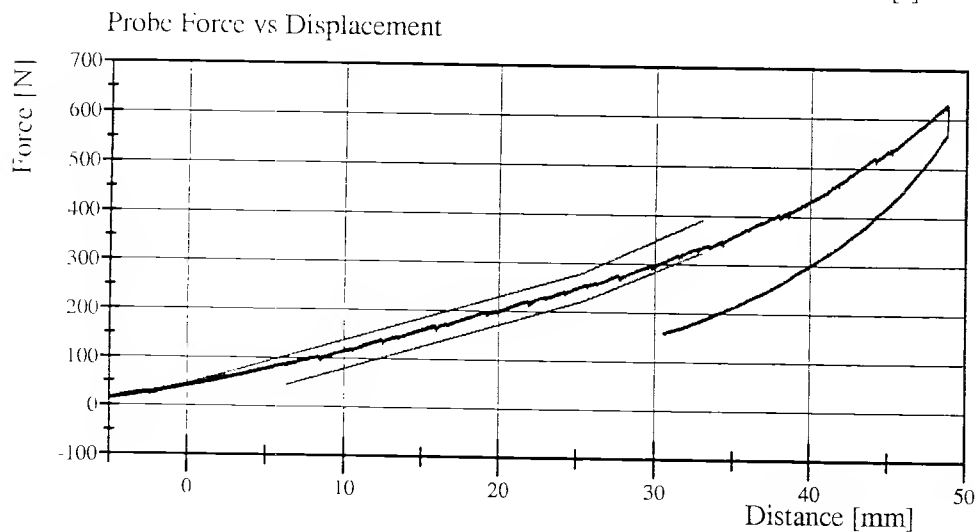
Min: -2.5 N at -1.0 s



Filter Class: CFC\_180

Max: 48.8 mm at 6.2 s

Min: -7.4 mm at -1.0 s



Filter Class: CFC\_600

Max: 629.6 N at 48.7 mm

Min: -2.5 N at -7.4 mm



# Transportation Research Center Inc.

Left Lateral Thorax

SID-HIII Serial No. 055 Certification No. 19-1

Test Date: 03/18/2006

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.6 °C	21.5 °C	Yes
Relative Humidity	10 - 70 %	26 %	Yes
Impactor Velocity	4.27 - 4.33 m/s	4.308 m/s	Yes
Upper Rib Lateral Acceleration	37 - 46 g	40.7 g	Yes
Lower Rib Lateral Acceleration	37 - 46 g	40.7 g	Yes
Lower Spine Lateral Acceleration	15 - 22 g	19.0 g	Yes

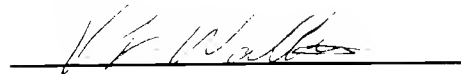
Test meets specifications.

Comments:

Technician



Approved



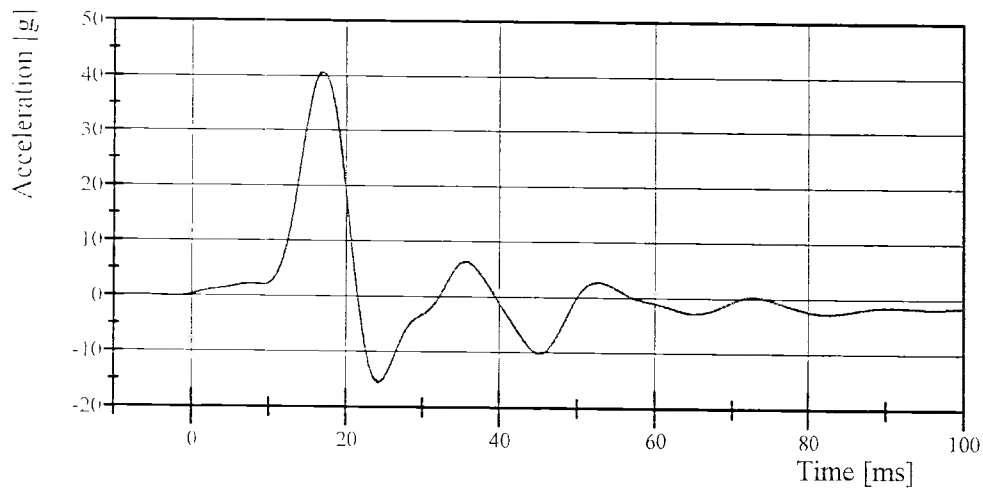
# Transportation Research Center Inc.

Left Lateral Thorax

SID-HIII Serial No. 055 Certification No. 19-1

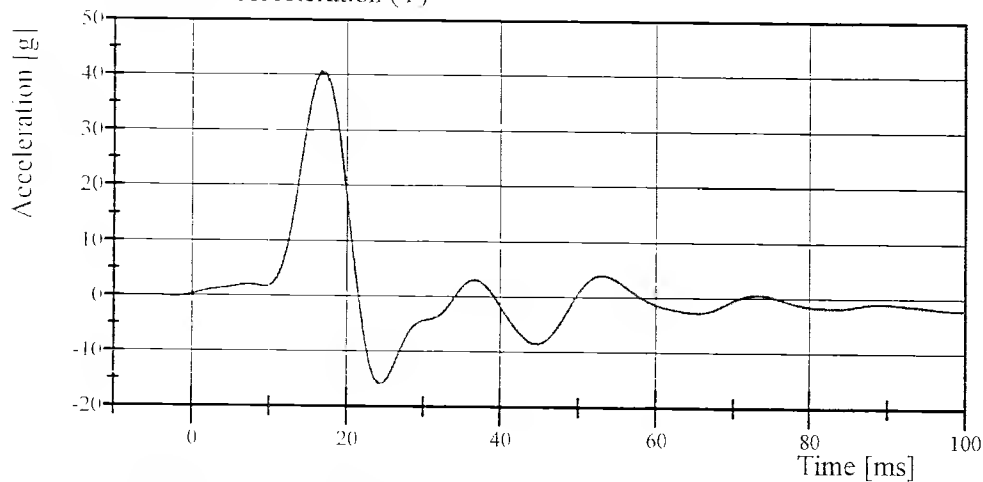
Test Date: 03/18/2006

Upper Rib Acceleration (Y)



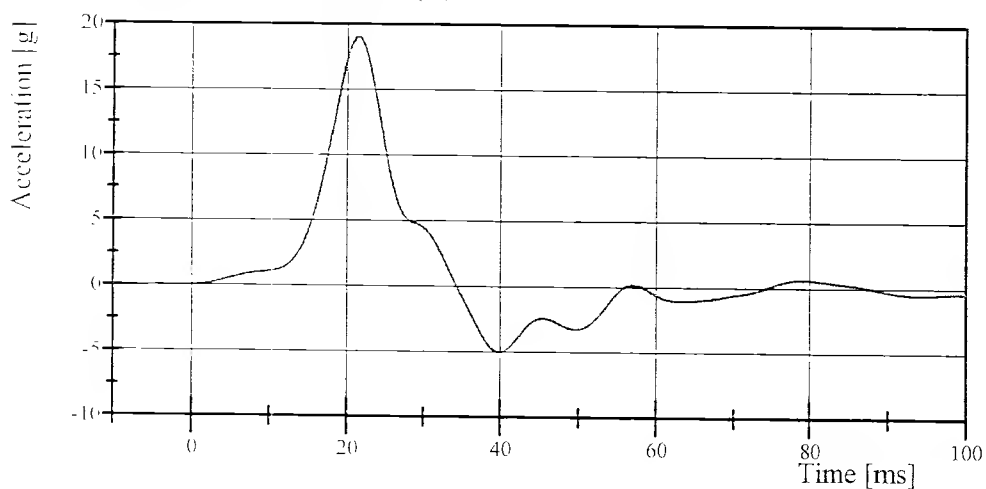
Filter Class: FIR\_100  
Max: 40.7 g at 16.7 ms  
Min: -15.6 g at 24.2 ms

Lower Rib Acceleration (Y)



Filter Class: FIR\_100  
Max: 40.7 g at 16.7 ms  
Min: -15.9 g at 24.2 ms

Lower Spine Acceleration (Y)



Filter Class: FIR\_100  
Max: 19.0 g at 21.7 ms  
Min: -5.0 g at 39.8 ms

# Transportation Research Center Inc.

Left Lateral Pelvis

SID-HIII Serial No. 055 Certification No. 19-1

Test Date: 03/18/2006

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.5 °C	21.0 °C	Yes
Relative Humidity	10 - 70 %	27 %	Yes
Impactor Velocity	4.27 - 4.33 m/s	4.298 m/s	Yes
Pelvis Lateral Acceleration Duration above 20g	3 - 7 ms	5.8 ms	Yes
Pelvis Lateral Acceleration	40 - 60 g	51.8 g	Yes
Is Acceleration Curve Unimodal Above 20g?	Yes	Yes	Yes

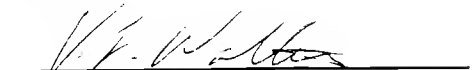
Test meets specifications.

Comments:

Technician



Approved

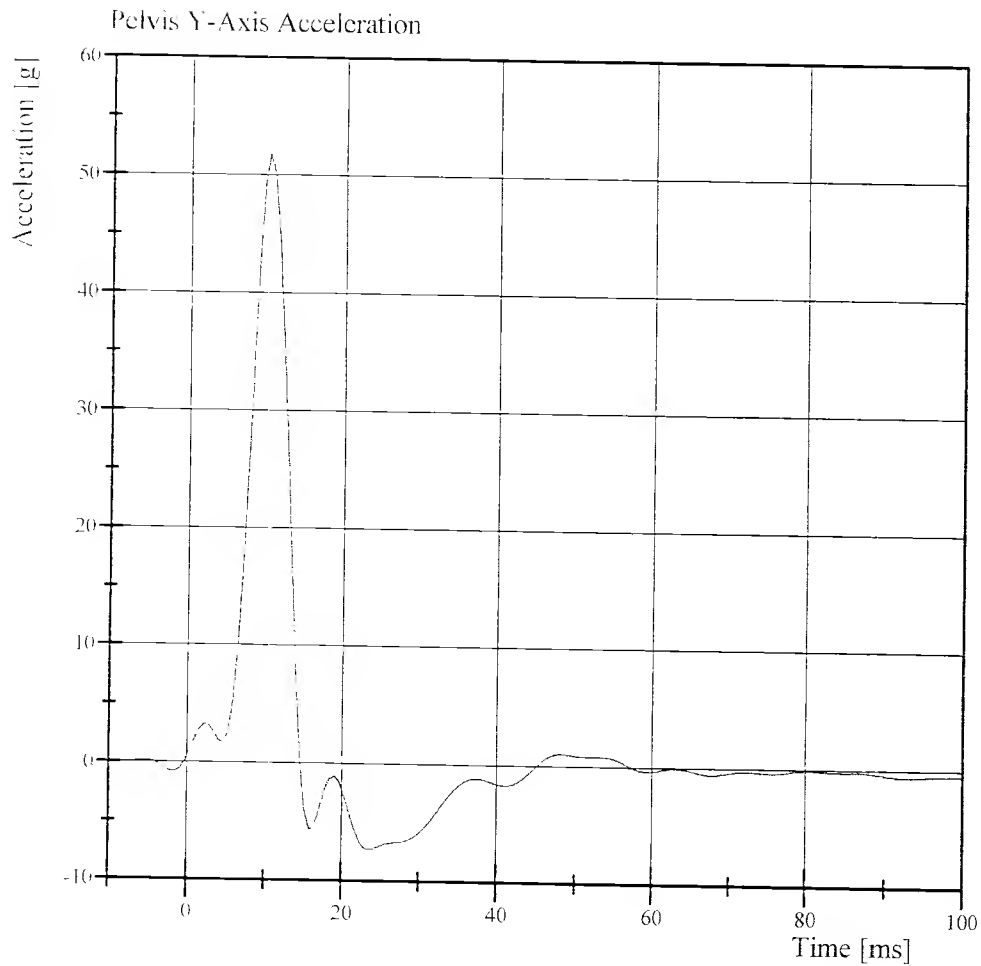


# Transportation Research Center Inc.

Left Lateral Pelvis

SID-HIII Serial No. 055 Certification No. 19-1

Test Date: 03/18/2006



Filter Class: FIR\_100  
Max: 51.8 g at 10.2 ms  
Min: -7.3 g at 23.4 ms

Calibration Test Results

Pre-Test

SID III: 066

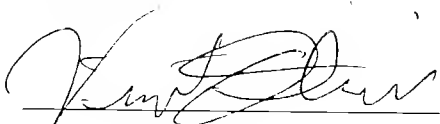
Configured for Left Side Impact

External Dimensions:	The dummy passed all external dimension requirements.
Lateral Thorax Impact Test:	The lateral thorax passed all impact test requirements.
Lumbar Flexion Test:	The dummy met the lumbar flexion test requirements.
Abdominal Compression Test:	The abdomen met the compression test requirements.
Pelvis Impact Test:	The lateral pelvis passed all impact test requirements.
Thoracic Shock Absorber Test:	The thoracic shock absorber passed all test requirements.

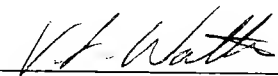
**Transportation Research Center Inc.**  
**572M SID/HIII Dummy**  
**External Dimensions**  
**Serial No. 066 Calibration No. 19**

Test Parameter	Dimension	Specification	Results	Pass
Seated Height	SH	889.0 - 909.3 mm	900 mm	Yes
Rib Height	RH	501.7 - 520.7 mm	510 mm	Yes
Hip Pivot Height	HP	99.1 REF mm	99.1 mm	
Knee Pivot From Backline	KH	510.5 - 525.8 mm	520 mm	Yes
Knee Pivot From Floor	KV	490.2 - 505.5 mm	495 mm	Yes
Hip Width	HW	355.6 - 391.2 mm	373 mm	Yes
Top Rib Width From C/L	RW-1	165.1 - 180.3 mm	172 mm	Yes
Bottom Rib Width From C/L	RW-2	165.1 - 180.3 mm	171 mm	Yes
Difference Between Top & Bottom Rib Width from C/L		<= 2.5 mm	1.0 mm	Yes

Technician



Approved







# Transportation Research Center Inc.

Left Lateral Head Drop

SID-HIII Serial No. 066 Certification No. 19-2

Test Date: 03/17/2006

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.6 °C	21.2 °C	Yes
Relative Humidity	10 - 70 %	31 %	Yes
Peak Head Resultant Acceleration	120 - 150 g	137.2 g	Yes
Peak Head Longitudinal Acceleration	(-15) - 15 g	5.9 g	Yes
Is Head Resultant Acceleration Curve Unimodal Within 15% of Peak?	Yes	Yes	Yes

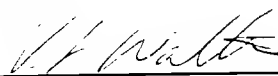
Test meets specifications.

Comments:

Technician



Approved

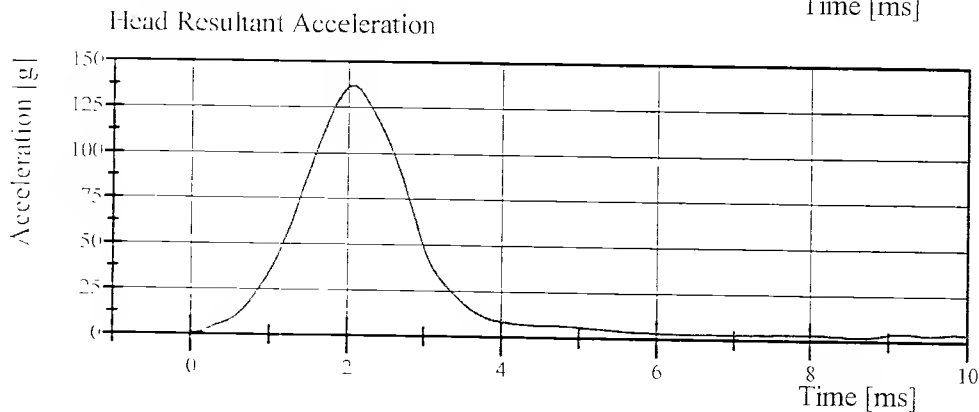
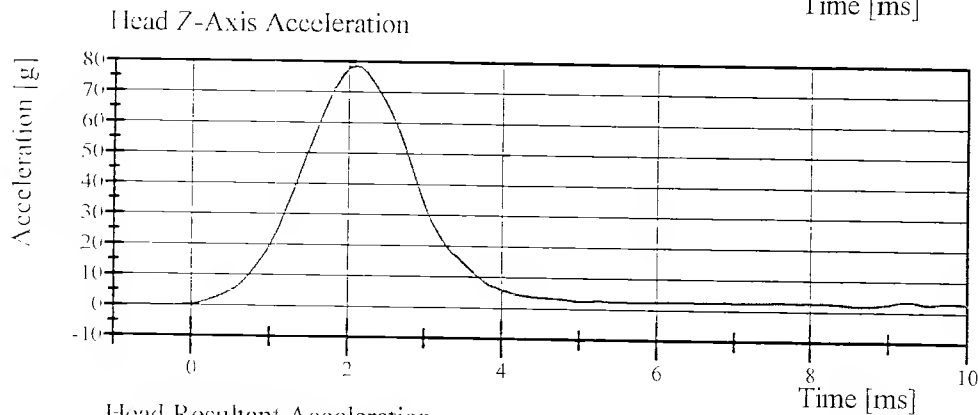
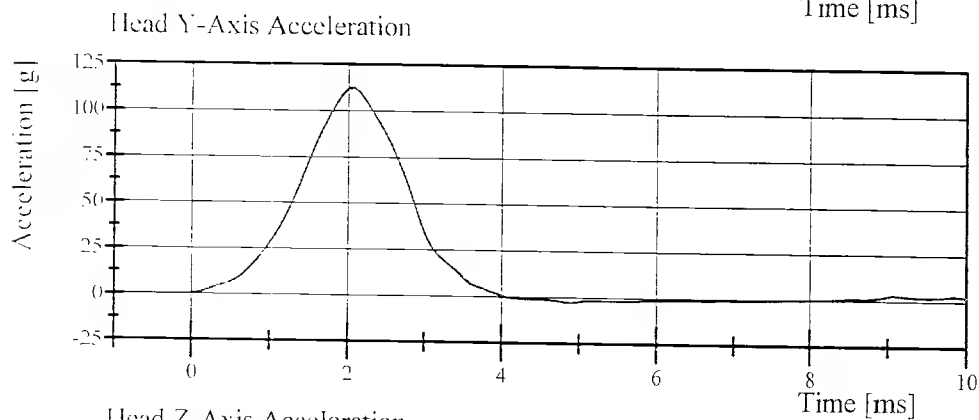
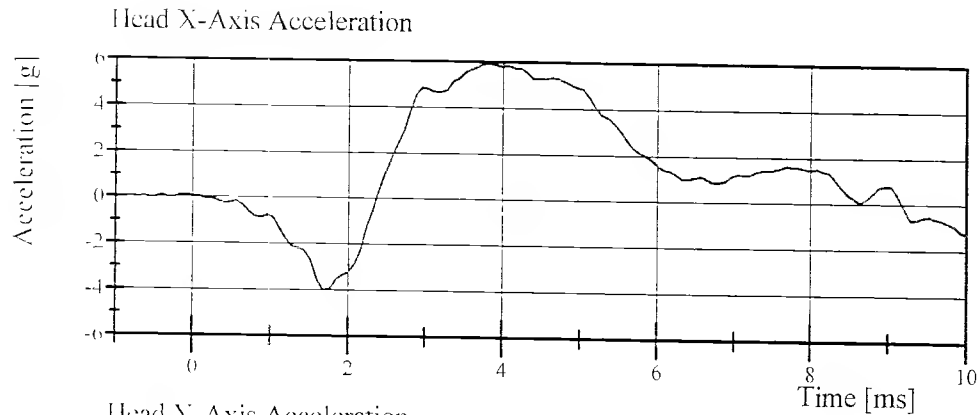


# Transportation Research Center Inc.

Left Lateral Head Drop

SID-HIII Serial No. 066 Certification No. 19-2

Test Date: 03/17/2006



# Transportation Research Center Inc.

Left Lateral Neck

SID-HIII Serial No. 066 Certification No. 19-1

Test Date: 03/18/2006

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.2 °C	Yes
Relative Humidity	10 - 70 %	29 %	Yes
Pendulum Velocity	(-6.89) - (-7.13) m/s	-7.020 m/s	Yes
Pendulum Integrated Velocity Change at 10 ms	1.96 - 2.55 m/s	2.151 m/s	Yes
Pendulum Integrated Velocity Change at 20 ms	4.12 - 5.10 m/s	4.357 m/s	Yes
Pendulum Integrated Velocity Change at 30 ms	5.73 - 7.01 m/s	6.222 m/s	Yes
Pendulum Integrated Velocity Change at 40 to 70 ms	6.27 - 7.64 m/s	7.280 m/s	Yes
Total Head D-Plane Rotation	(-66) - (-82) °	-68.7 °	Yes
Total Head D-Plane Rotation Time to 0° after Peak Rotation	58 - 67 ms	59.8 ms	Yes
Total Neck Occipital Condyle Moment	73 - 88 N·m	79.3 N·m	Yes
Total Neck Occipital Condyle Moment Time to 0 N·m after Peak Moment	49 - 64 ms	50.5 ms	Yes
Time from Peak Moment to Peak Rotation	2 - 16 ms	7.4 ms	Yes

**Test meets specifications.**

**Comments:**

Technician



Approved

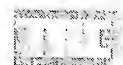
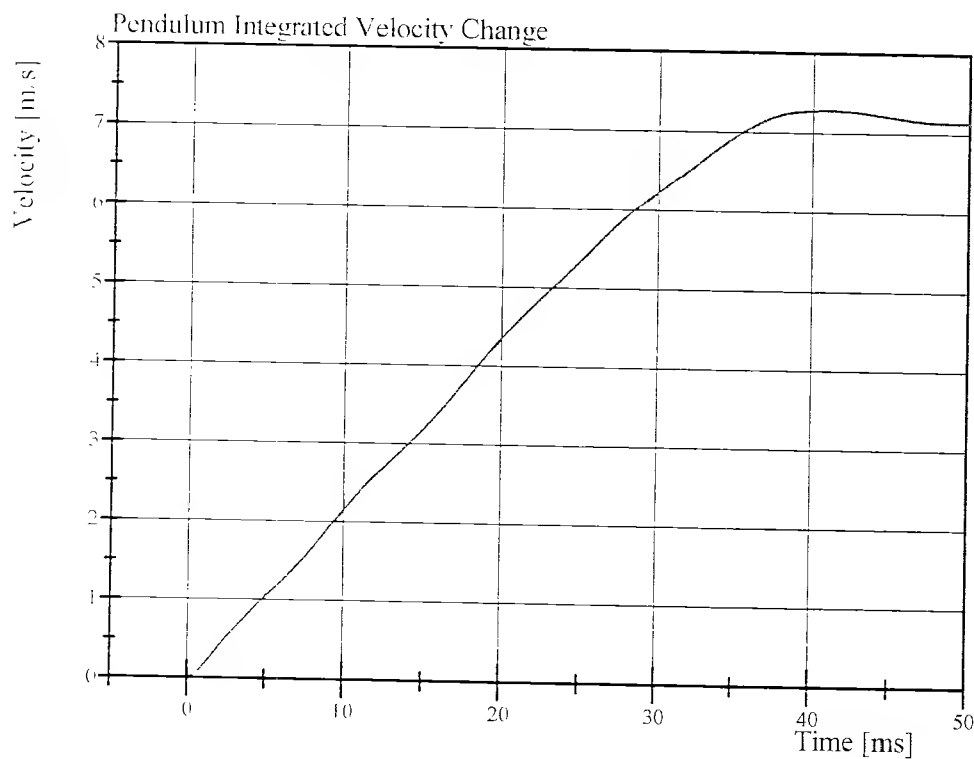
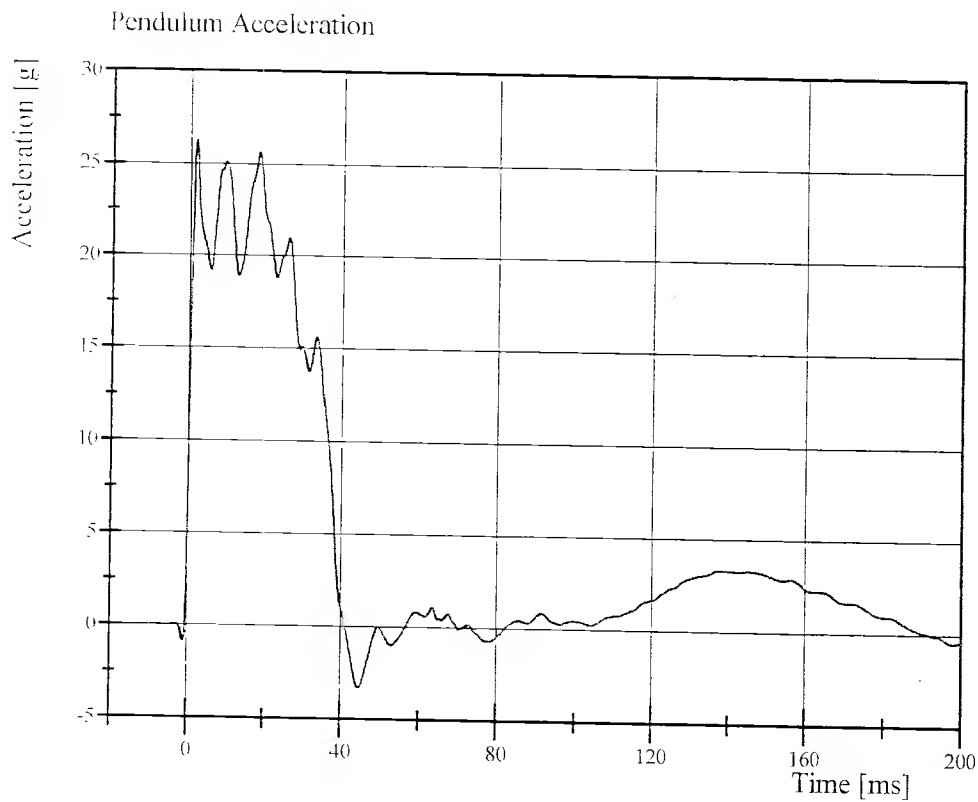


# Transportation Research Center Inc.

Left Lateral Neck

SID-HIII Serial No. 066 Certification No. 19-1

Test Date: 03/18/2006



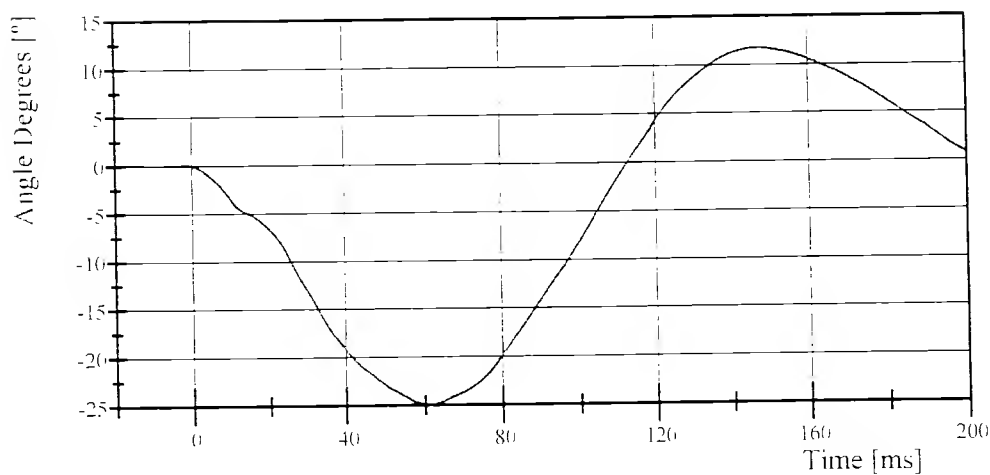
# Transportation Research Center Inc.

Left Lateral Neck

SID-HIII Serial No. 066 Certification No. 19-1

Test Date: 03/18/2006

Pot Rotation at the Base of Neck

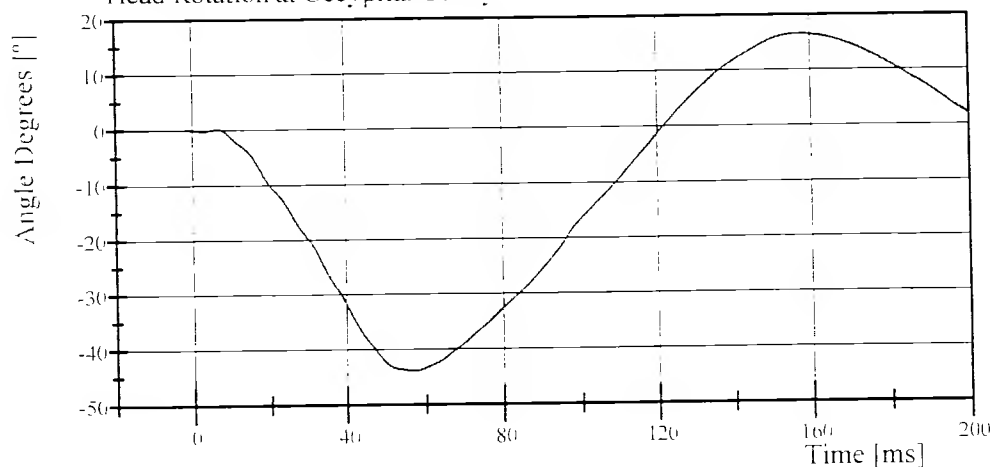


Filter Class: CFC\_60

Max: 11.7 ° at 147.0 ms

Min: -25.0 ° at 61.0 ms

Head Rotation at Occipital Condyles

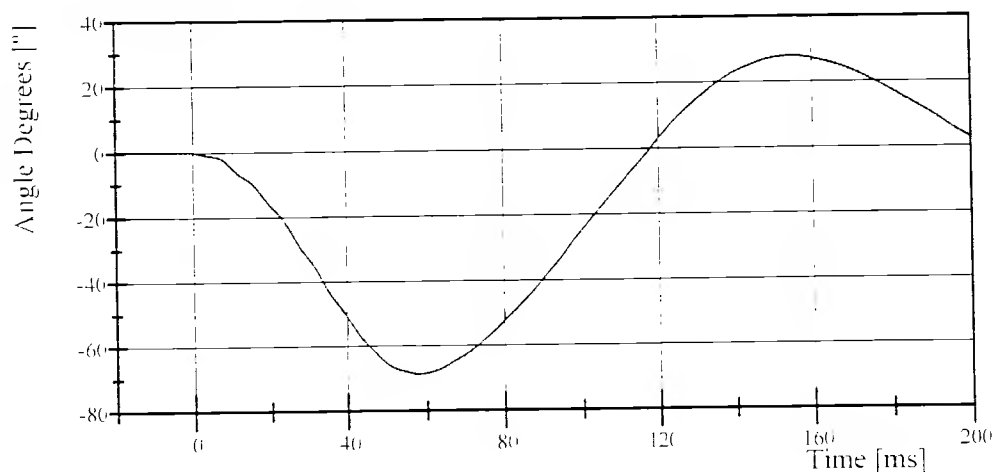


Filter Class: CFC\_60

Max: 16.6 ° at 157.4 ms

Min: -44.0 ° at 57.0 ms

Total Head D-Plane Rotation



Filter Class: CFC\_60

Max: 27.8 ° at 154.5 ms

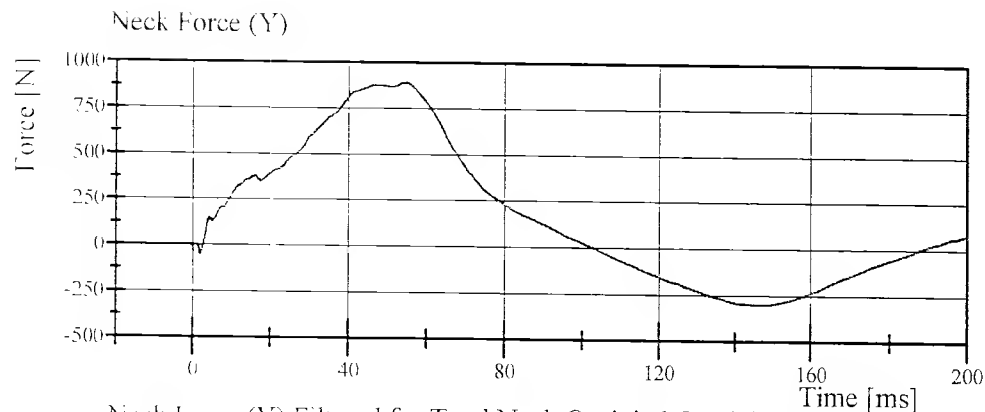
Min: -68.7 ° at 58.1 ms

# Transportation Research Center Inc.

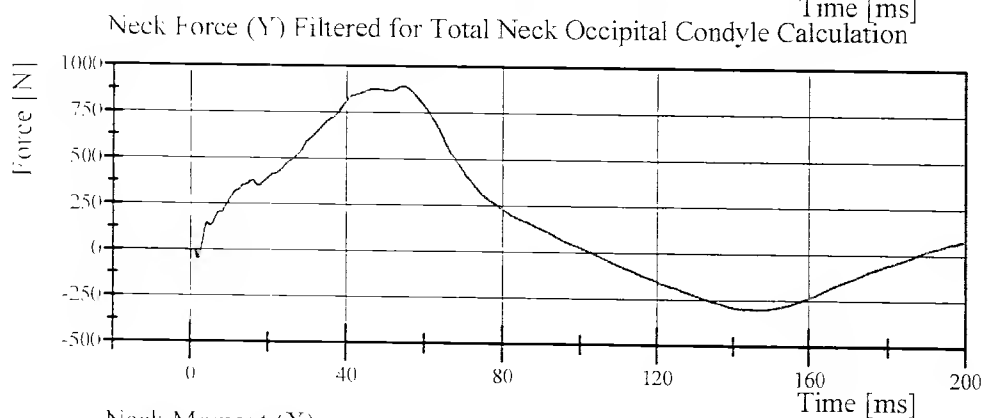
Left Lateral Neck

SID-HIII Serial No. 066 Certification No. 19-1

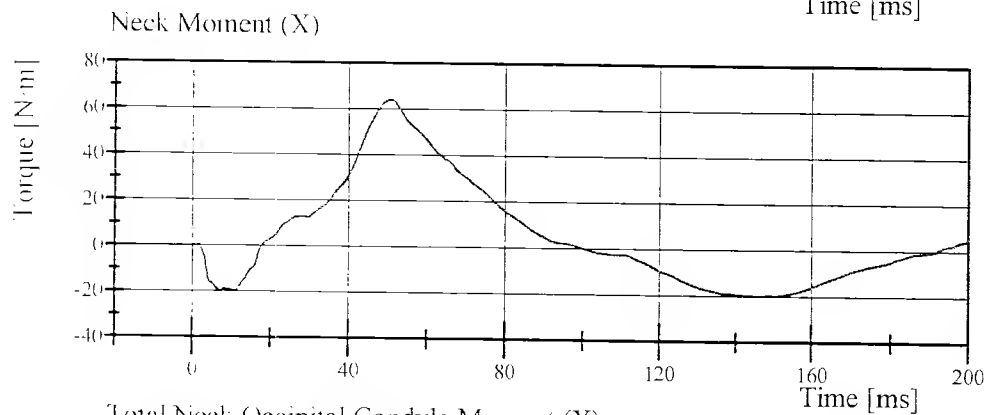
Test Date: 03/18/2006



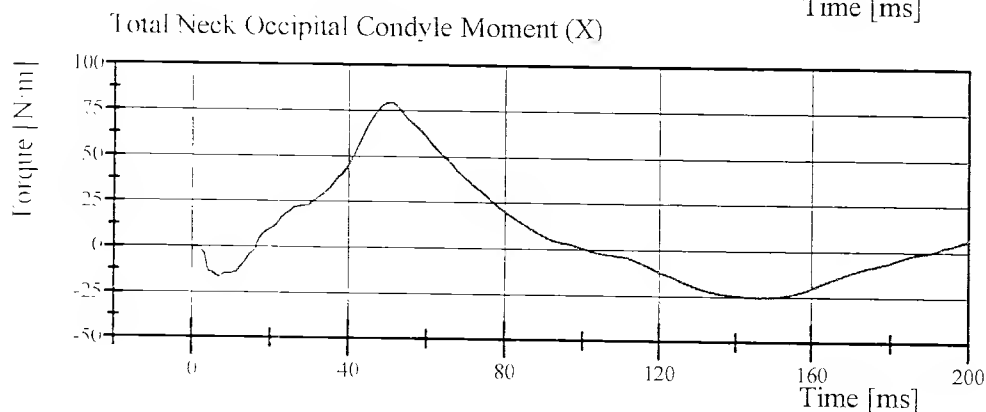
Filter Class: CFC\_1000  
Max: 892.1 N at 54.7 ms  
Min: -302.5 N at 146.2 ms



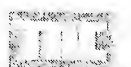
Filter Class: CFC\_600  
Max: 891.5 N at 54.7 ms  
Min: -302.4 N at 146.8 ms



Filter Class: CFC\_600  
Max: 63.9 N·m at 50.6 ms  
Min: -20.1 N·m at 7.1 ms



Filter Class: CFC\_600  
Max: 79.3 N·m at 50.6 ms  
Min: -25.4 N·m at 146.4 ms



# Transportation Research Center Inc.

3.05 m/s Thoracic Shock Absorber Compression

SID-HIII Serial No. 066 Certification No. 19-2

Test Date: 03/18/2006

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.5 °C	21.4 °C	Yes
Relative Humidity	10 - 70 %	27 %	Yes
Maximum Force at Test Velocity	853 - 1,142 N	929.5 N	Yes
Maximum Displacement at Test Velocity	30.2 - 35.18 mm	33.062 mm	Yes

**Test meets specifications.**

## Comments:

Actual Impactor Velocity (m/s): 3.071

Damper Setting: 7.5

Technician



Approved





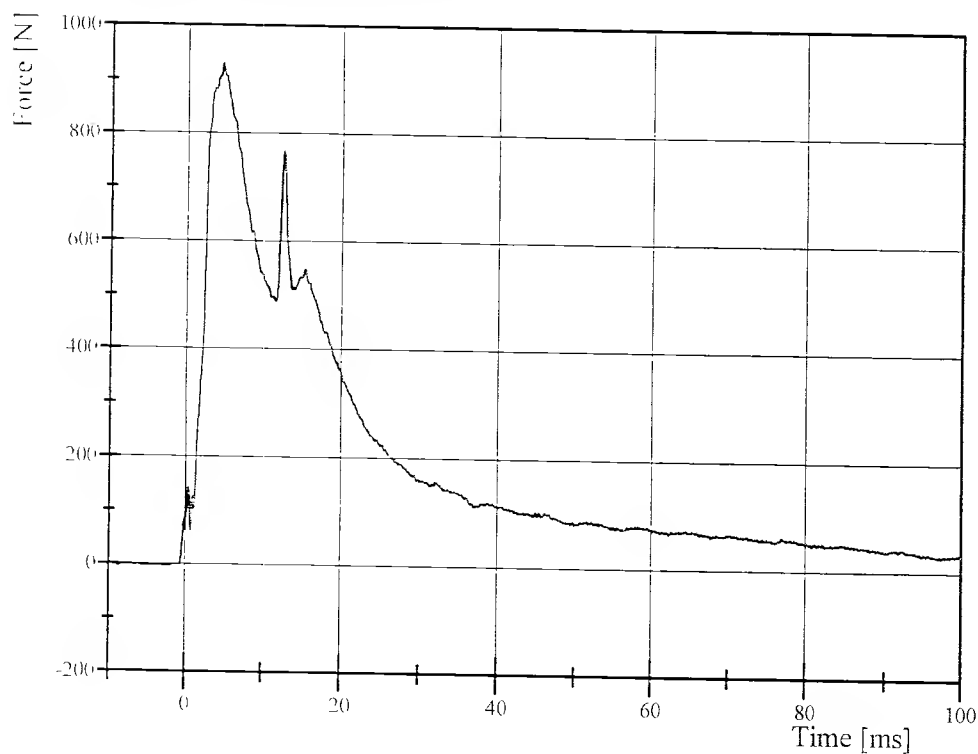
# Transportation Research Center Inc.

3.05 m/s Thoracic Shock Absorber Compression

SID-HIII Serial No. 066 Certification No. 19-2

Test Date: 03/18/2006

Shock Absorber Resistive Force

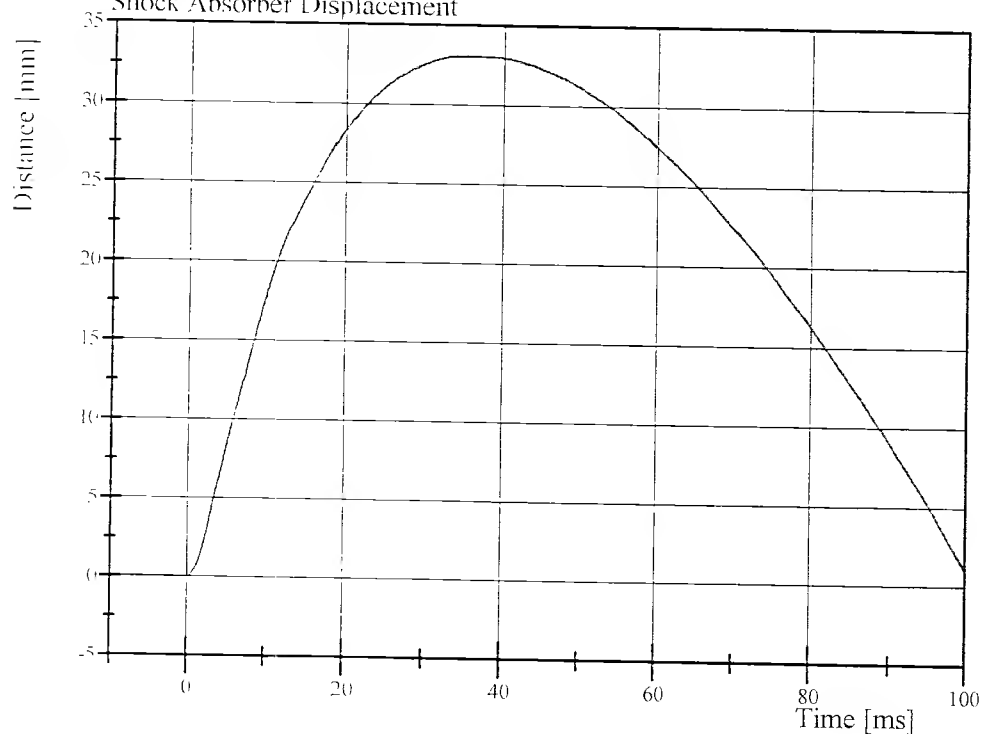


Filter Class: CFC\_1000

Max: 929.5 N at 4.6 ms

Min: -3.9 N at -4.6 ms

Shock Absorber Displacement



Filter Class: CFC\_1000

Max: 33.1 mm at 35.0 ms

Min: -0.0 mm at -8.9 ms

# Transportation Research Center Inc.

4.27 m/s Thoracic Shock Absorber Compression

SID-HIII Serial No. 066 Certification No. 19-7

Test Date: 03/18/2006

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.5 °C	21.0 °C	Yes
Relative Humidity	10 - 70 %	27 %	Yes
Maximum Force at Test Velocity	1.767 - 2.135 N	1.838.9 N	Yes
Maximum Displacement at Test Velocity	31.72 - 37.28 mm	36.307 mm	Yes

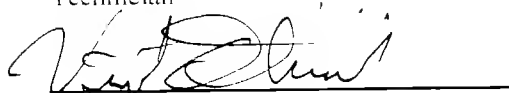
**Test meets specifications.**

## Comments:

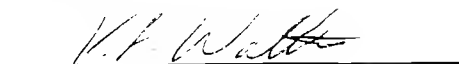
Actual Impactor Velocity (m/s): 4.303

Damper Setting: 7.5

Technician



Approved



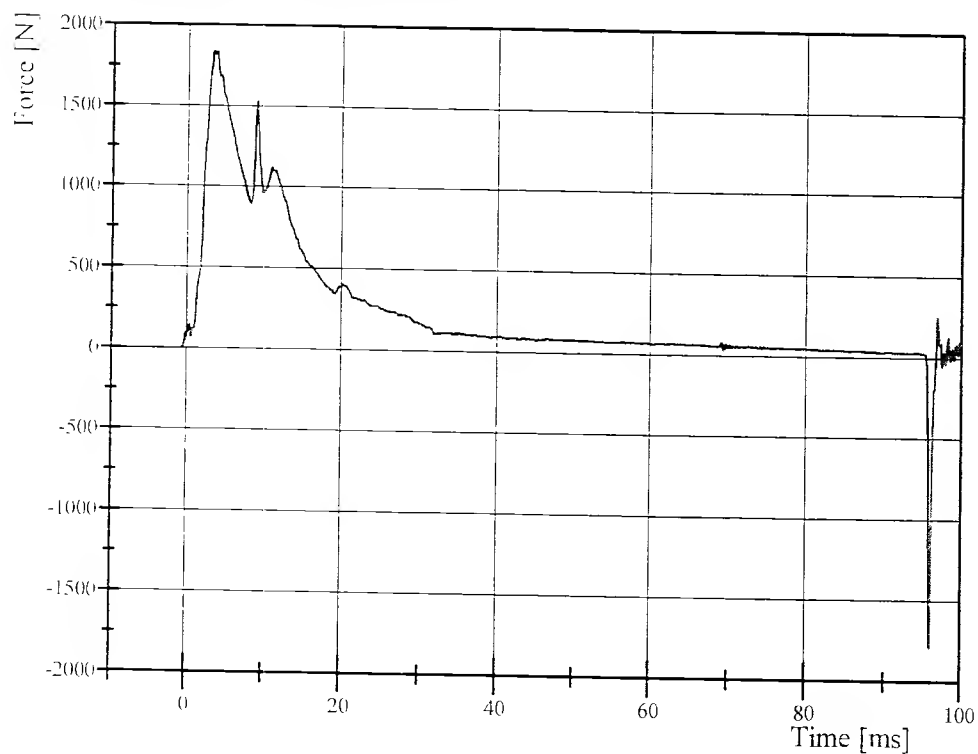
# Transportation Research Center Inc.

4.27 m/s Thoracic Shock Absorber Compression

SID-HIII Serial No. 066 Certification No. 19-7

Test Date: 03/18/2006

Shock Absorber Resistive Force

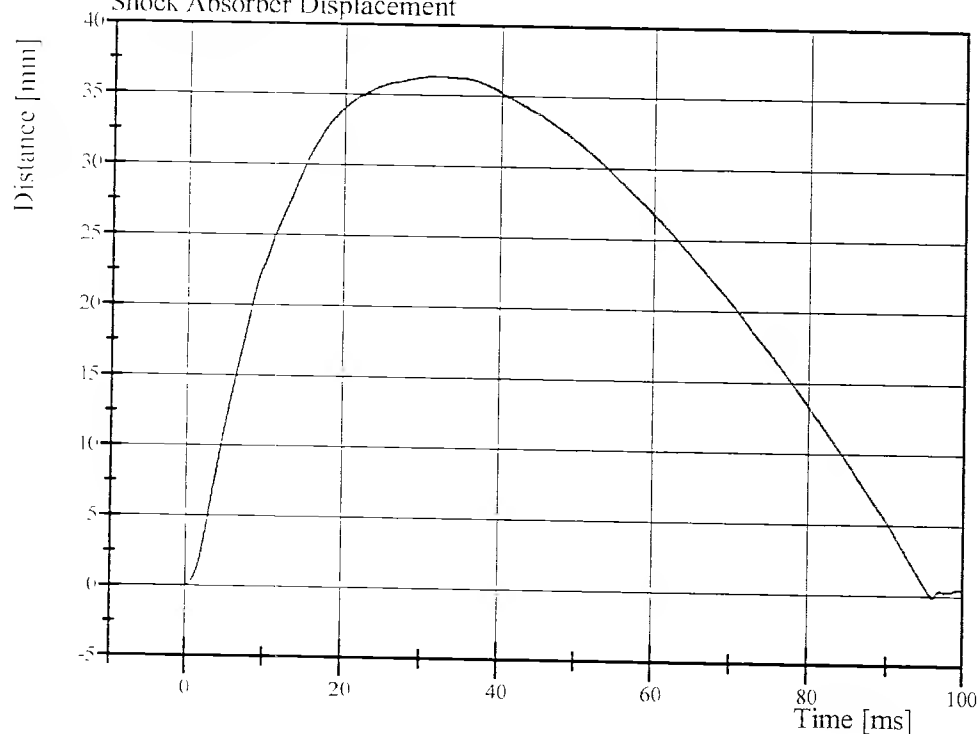


Filter Class: CFC\_1000

Max: 1,838.9 N at 3.3 ms

Min: -1,784.6 N at 96.0 ms

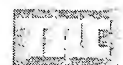
Shock Absorber Displacement



Filter Class: CFC\_1000

Max: 36.3 mm at 30.9 ms

Min: -0.1 mm at 96.0 ms



# Transportation Research Center Inc.

6.10 m/s Thoracic Shock Absorber Compression  
SID-III Serial No. 066 Certification No. 19-11  
Test Date: 03/18/2006

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.5 °C	21.0 °C	Yes
Relative Humidity	10 - 70 %	27 %	Yes
Maximum Force at Test Velocity	3.766 - 4.464 N	3.915.2 N	Yes
Maximum Displacement at Test Velocity	33.38 - 39.59 mm	38.854 mm	Yes

**Test meets specifications.**

## Comments:

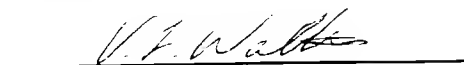
Actual Impactor Velocity (m/s): 6.112

Damper Setting: 7.5

Technician

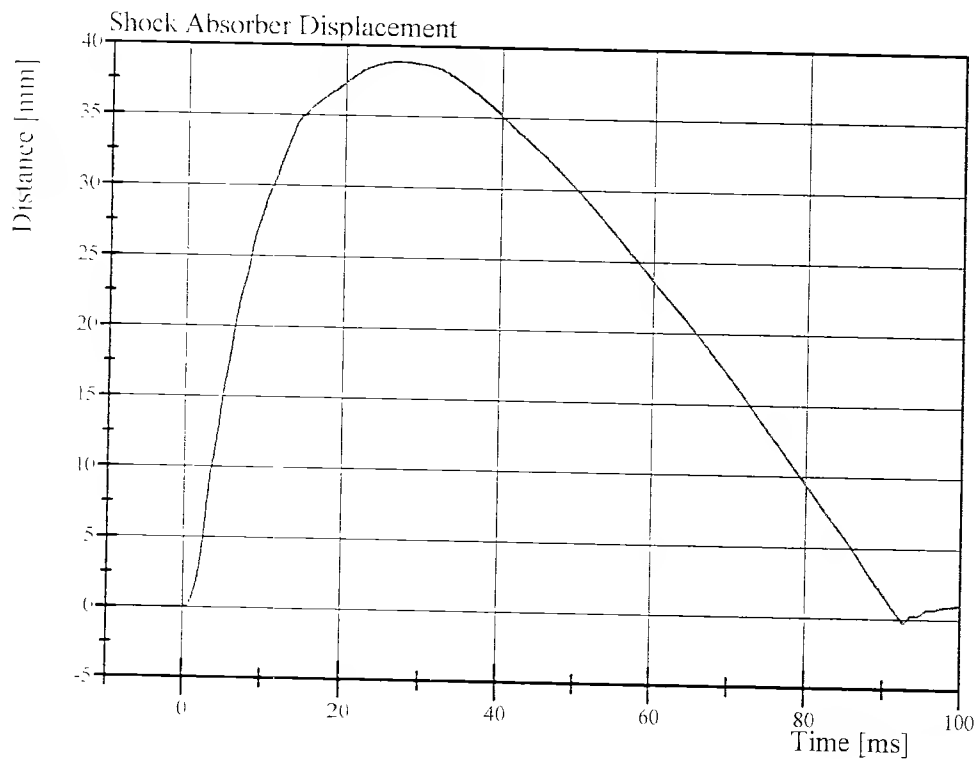
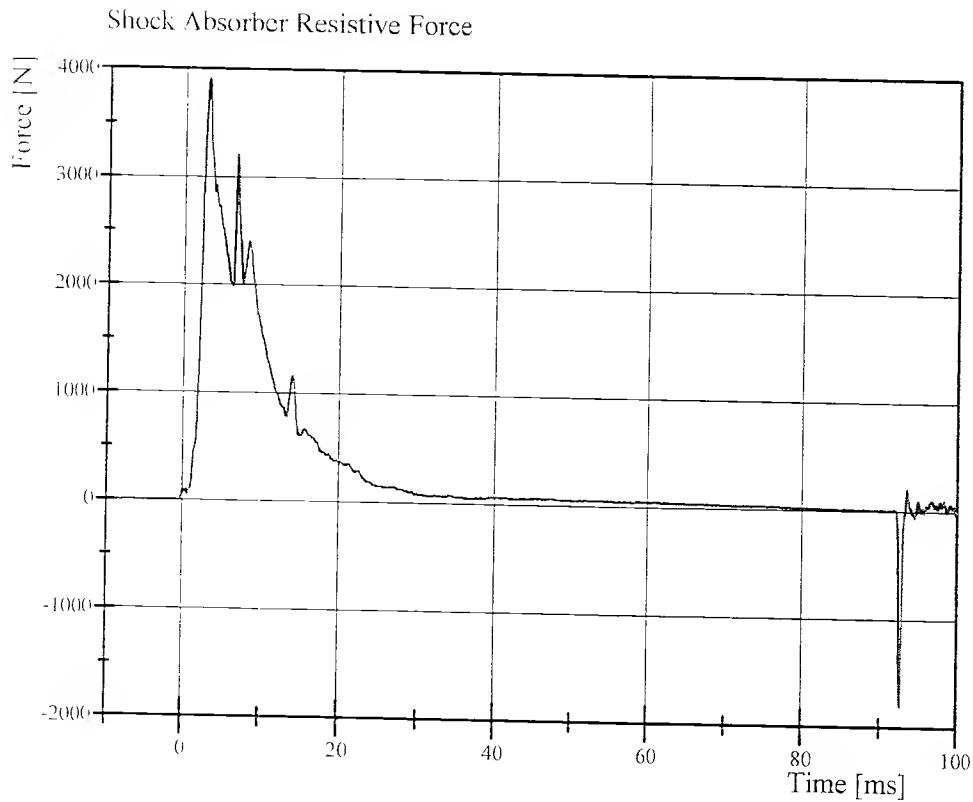


Approved



# Transportation Research Center Inc.

6.10 m/s Thoracic Shock Absorber Compression  
SID-HIII Serial No. 066 Certification No. 19-11  
Test Date: 03/18/2006



# Transportation Research Center Inc.

Abdomen Compression

SID-HIII Serial No. 066 Certification No. 19-2

Test Date: 03/18/2006

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.5 °C	21.4 °C	Yes
Relative Humidity	10 - 70 %	27 %	Yes
Probe Force within Corridor	Yes	Yes	Yes
Probe Velocity	6.35 - 8.89 mm/s	7.920 mm/s	Yes

Test meets specifications.

Comments:

Technician



Approved

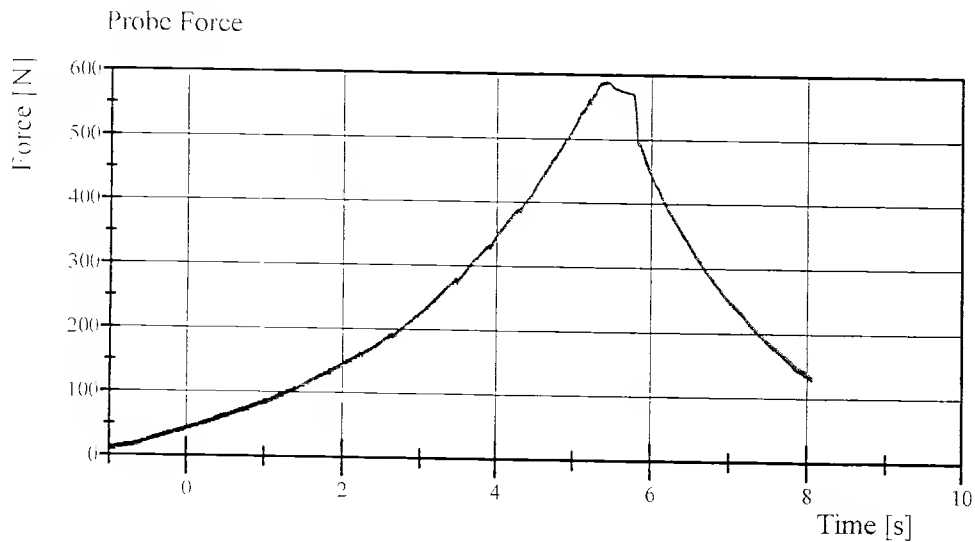


# Transportation Research Center Inc.

Abdomen Compression

SID-HIII Serial No. 066 Certification No. 19-2

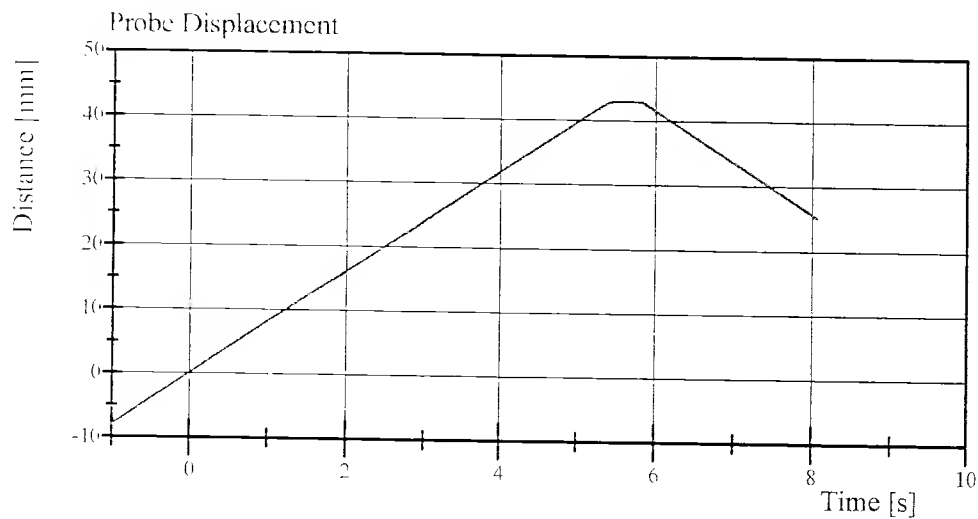
Test Date: 03/18/2006



Filter Class: CFC\_600

Max: 588.6 N at 5.4 s

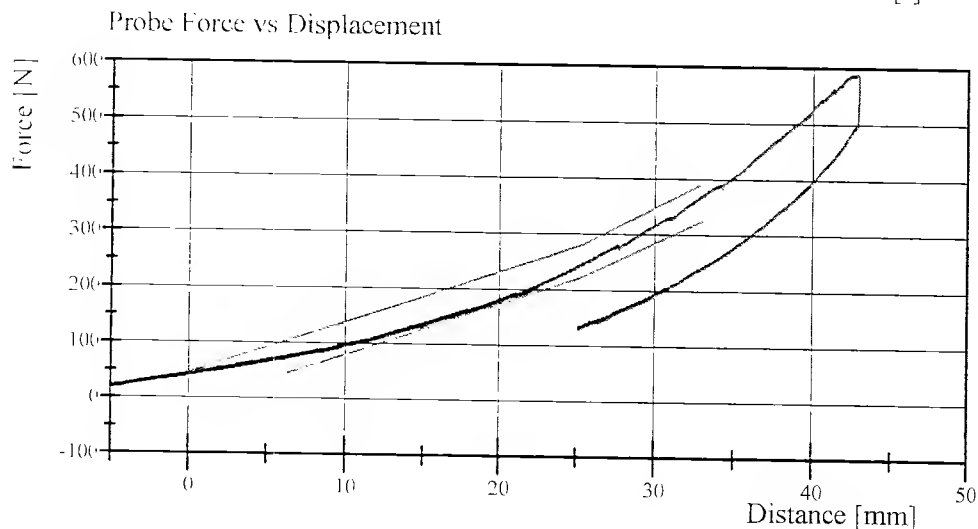
Min: 6.7 N at -0.9 s



Filter Class: CFC\_180

Max: 43.0 mm at 5.8 s

Min: -8.0 mm at -1.0 s



Filter Class: CFC\_600

Max: 588.6 N at 42.8 mm

Min: -7.0 N at -13.3 mm



# Transportation Research Center Inc.

Left Lateral Thorax

SID-HIII Serial No. 066 Certification No. 19-1

Test Date: 03/18/2006

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.6 °C	21.2 °C	Yes
Relative Humidity	10 - 70 %	26 %	Yes
Impactor Velocity	4.27 - 4.33 m/s	4.308 m/s	Yes
Upper Rib Lateral Acceleration	37 - 46 g	46.0 g	Yes
Lower Rib Lateral Acceleration	37 - 46 g	44.3 g	Yes
Lower Spine Lateral Acceleration	15 - 22 g	21.0 g	Yes


Test meets specifications.

Comments:

Technician



Approved



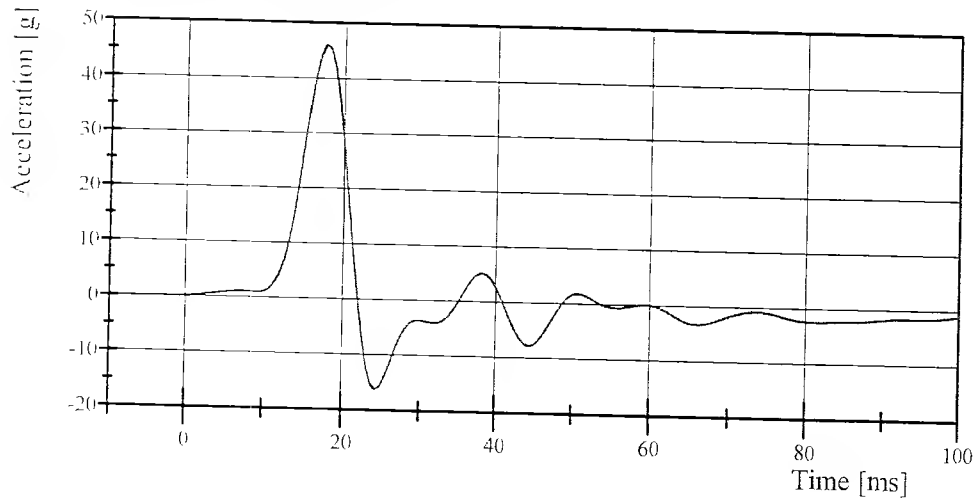
# Transportation Research Center Inc.

Left Lateral Thorax

SID-HIII Serial No. 066 Certification No. 19-1

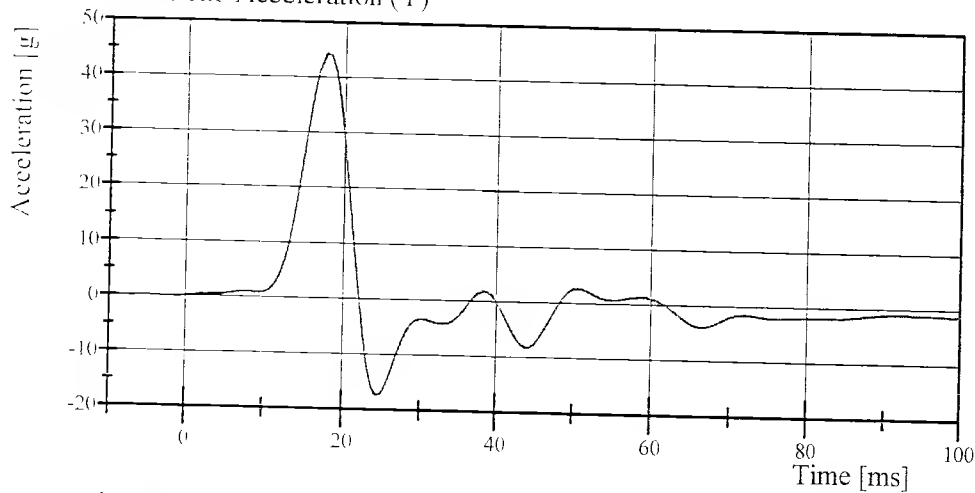
Test Date: 03/18/2006

Upper Rib Acceleration (Y)



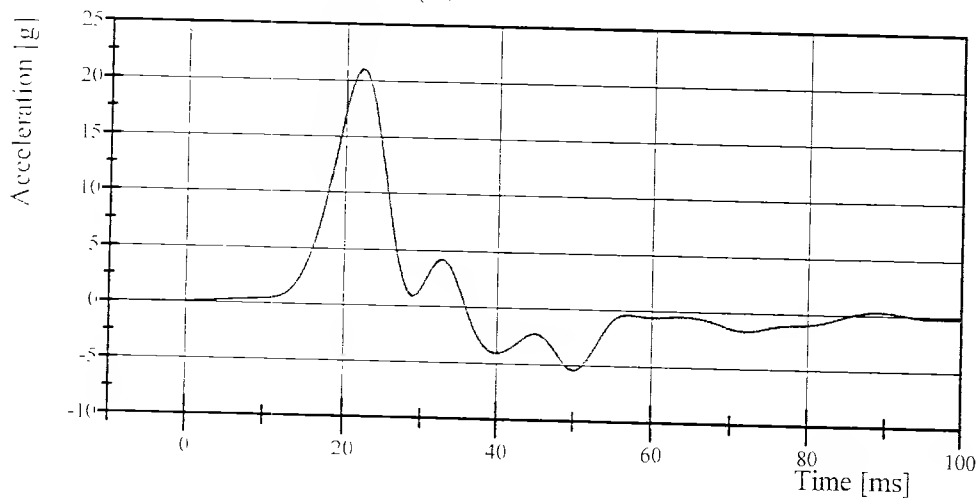
Filter Class: FIR\_100  
Max: 46.0 g at 17.5 ms  
Min: -16.3 g at 24.4 ms

Lower Rib Acceleration (Y)



Filter Class: FIR\_100  
Max: 44.3 g at 17.5 ms  
Min: -17.4 g at 24.4 ms

Lower Spine Acceleration (Y)



Filter Class: FIR\_100  
Max: 21.0 g at 21.9 ms  
Min: -5.4 g at 50.0 ms

TRANSPORTATION RESEARCH CENTER INC.

LUMBAR FLEXION TEST

SID PART 572B

CAL DATE: 18-Mar-06

TRC, INC.

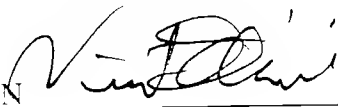
TEST NO: 066C19TF1

572B SN 066 TORSO FLEX CAL 19

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9 - 25.6° C	21.5 C
RELATIVE HUMIDITY	10 - 70 %	27 %
FORCE AT 0 DEG. FLEXION	-27 - 27 N	0 N
FORCE AT 20 DEG OF FLEXION	98 - 151 N	142.3 N
FORCE AT 30 DEG OF FLEXION	151 - 205 N	182.4 N
FORCE AT 40 DEG OF FLEXION	205 - 258 N	222.4 N
NET RETURN ANGLE AFTER 3 MINUTES	< 12 °	10.7 °

TEST MEETS SPECIFICATIONS

TECHNICIAN



# Transportation Research Center Inc.

Left Lateral Pelvis

SID-HIII Serial No. 066 Certification No. 19-1


Test Date: 03/18/2006

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.5 °C	21.5 °C	Yes
Relative Humidity	10 - 70 %	26 %	Yes
Impactor Velocity	4.27 - 4.33 m/s	4.299 m/s	Yes
Pelvis Lateral Acceleration Duration above 20g	3 - 7 ms	6.2 ms	Yes
Pelvis Lateral Acceleration	40 - 60 g	42.5 g	Yes
Is Acceleration Curve Unimodal Above 20g?	Yes	Yes	Yes

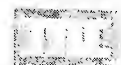
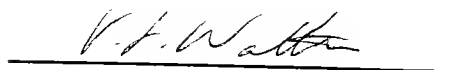
Test meets specifications.

Comments:

Technician



Approved

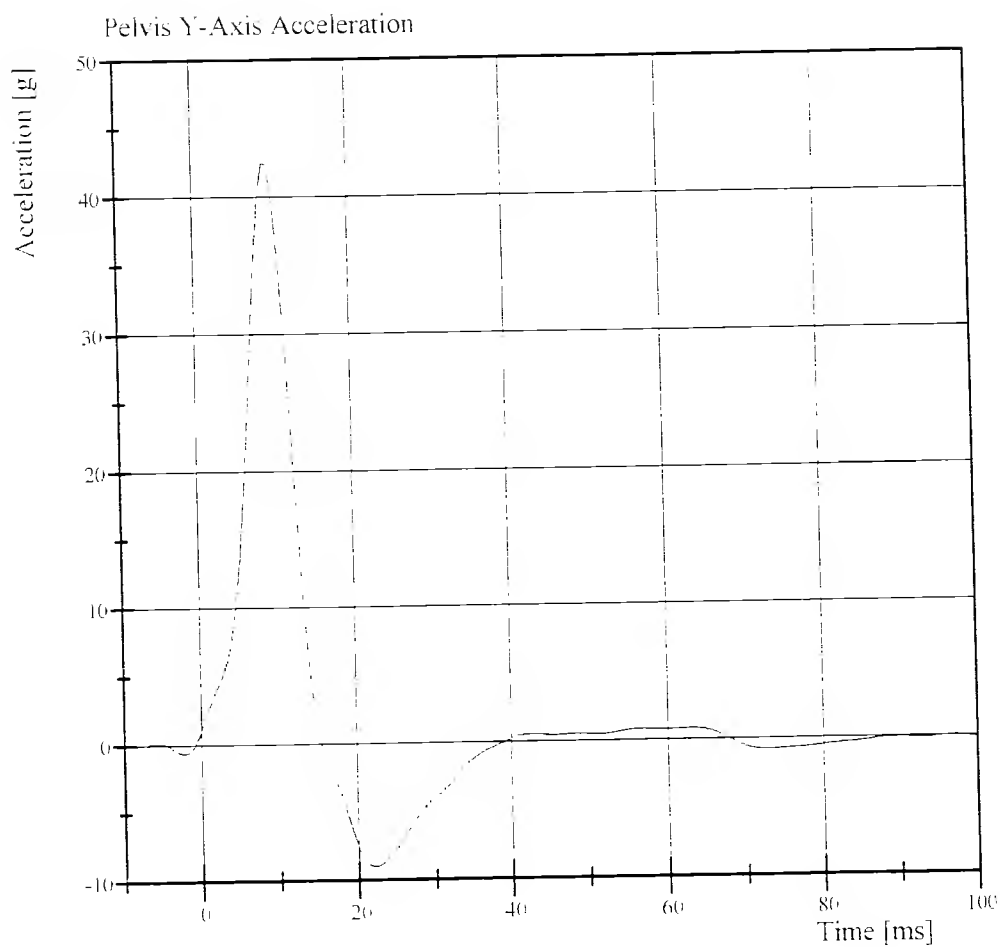


# Transportation Research Center Inc.

Left Lateral Pelvis

SID-HIII Serial No. 066 Certification No. 19-1

Test Date: 03/18/2006



Filter Class: FIR\_100

Max: 42.5 g at 9.1 ms

Min: -9.0 g at 22.2 ms



Calibration Test Results

Post-Test

SID HIII: 055


Configured for Left Side Impact

External Dimensions:	The dummy passed all external dimension requirements.
Lateral Thorax Impact Test:	The lateral thorax passed all impact test requirements.
Lumbar Flexion Test:	The dummy met the lumbar flexion test requirements.
Abdominal Compression Test:	The abdomen met the compression test requirements.
Pelvis Impact Test:	The lateral pelvis passed all impact test requirements.
Thoracic Shock Absorber Test:	The thoracic shock absorber was not tested at this time.


Transportation Research Center Inc.  
 SID/HIII Dummy  
 External Dimensions  
 Serial No. 055 Calibration No. 20

Test Parameter	Dimension	Specification	Results	Pass
Seated Height	SH	889.0 - 909.3 mm	905 mm	Yes
Rib Height	RH	501.7 - 520.7 mm	512 mm	Yes
Hip Pivot Height	HP	99.1 REF mm	99.1 mm	
Knee Pivot From Backline	KH	510.5 - 525.8 mm	522 mm	Yes
Knee Pivot From Floor	KV	490.2 - 505.5 mm	495 mm	Yes
Hip Width	HW	355.6 - 391.2 mm	370 mm	Yes
Top Rib Width From CVL	RW-1	165.1 - 180.3 mm	171 mm	Yes
Bottom Rib Width From CVL	RW-2	165.1 - 180.3 mm	170 mm	Yes
Difference Between Top & Bottom Rib Width from CVL		<= 2.5 mm	0.0 mm	Yes

Technician



Approved







# Transportation Research Center Inc.

Left Lateral Head Drop

SID-HIII Serial No. 055 Certification No. 20-1

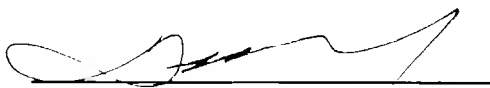
Test Date: 03/24/2006

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.6 °C	21.1 °C	Yes
Relative Humidity	10 - 70 %	27 %	Yes
Peak Head Resultant Acceleration	120 - 150 g	141.1 g	Yes
Peak Head Longitudinal Acceleration	(-15) - 15 g	6.1 g	Yes
Is Head Resultant Acceleration Curve Unimodal Within 15% of Peak?	Yes	Yes	Yes

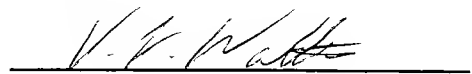
**Test meets specifications.**

**Comments:**

Technician



Approved

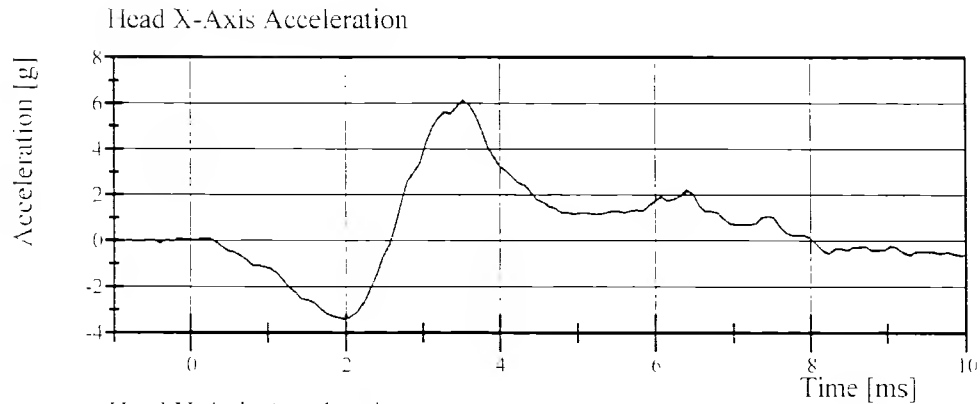


# Transportation Research Center Inc.

Left Lateral Head Drop

SID-HIII Serial No. 055 Certification No. 20-1

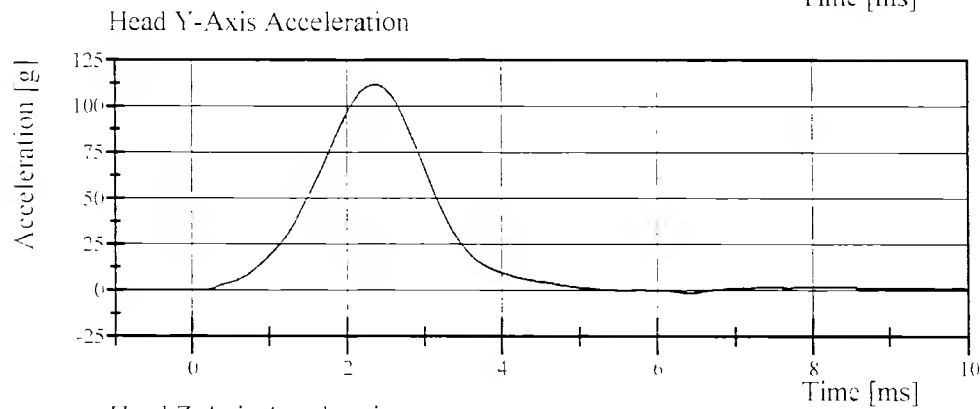
Test Date: 03/24/2006



Filter Class: CFC\_1000

Max: 6.1 g at 3.5 ms

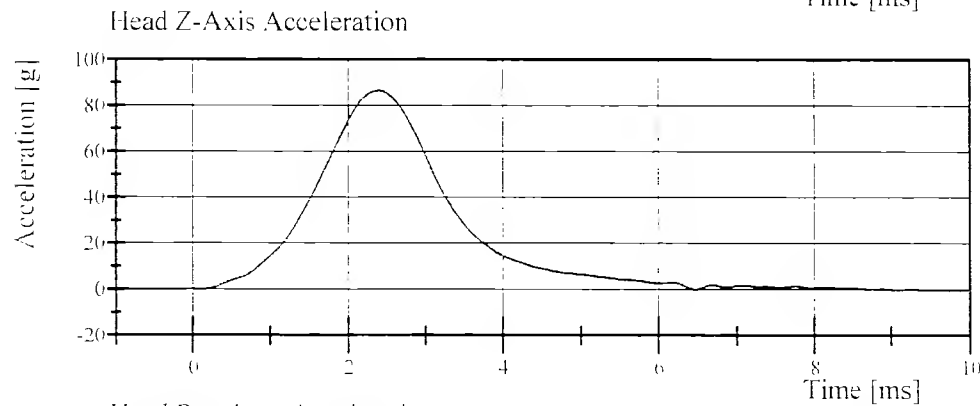
Min: -3.4 g at 2.0 ms



Filter Class: CFC\_1000

Max: 111.5 g at 2.4 ms

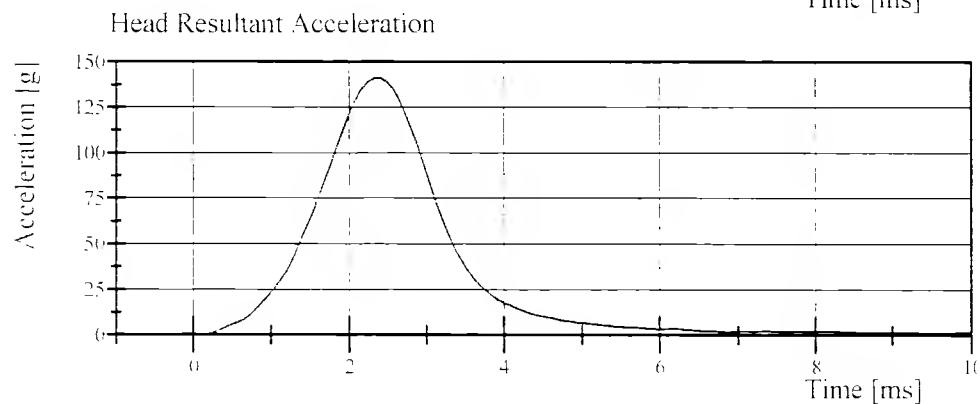
Min: -1.8 g at 6.4 ms



Filter Class: CFC\_1000

Max: 86.5 g at 2.4 ms

Min: -0.4 g at 9.4 ms



Filter Class: CFC\_1000

Max: 141.1 g at 2.4 ms

Min: 0.0 g at -0.2 ms

# Transportation Research Center Inc.

Left Lateral Neck

SID-HIII Serial No. 055 Certification No. 20-1

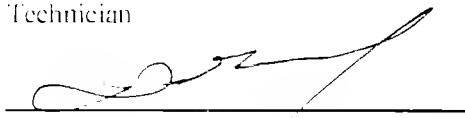
Test Date: 03/27/2006

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.0 °C	Yes
Relative Humidity	10 - 70 %	28 %	Yes
Pendulum Velocity	(-6.89) - (-7.13) m/s	-7.012 m/s	Yes
Pendulum Integrated Velocity Change at 10 ms	1.96 - 2.55 m/s	2.296 m/s	Yes
Pendulum Integrated Velocity Change at 20 ms	4.12 - 5.10 m/s	4.604 m/s	Yes
Pendulum Integrated Velocity Change at 30 ms	5.73 - 7.01 m/s	6.528 m/s	Yes
Pendulum Integrated Velocity Change at 40 to 70 ms	6.27 - 7.64 m/s	7.263 m/s	Yes
Total Head D-Plane Rotation	(-66) - (-82) °	-71.7 °	Yes
Total Head D-Plane Rotation Time to 0° after Peak Rotation	58 - 67 ms	60.6 ms	Yes
Total Neck Occipital Condyle Moment	73 - 88 N·m	83.1 N·m	Yes
Total Neck Occipital Condyle Moment Time to 0 N·m after Peak Moment	49 - 64 ms	53.5 ms	Yes
Time from Peak Moment to Peak Rotation	2 - 16 ms	8.2 ms	Yes

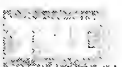

Test meets specifications.

Comments:

Technician



Approved



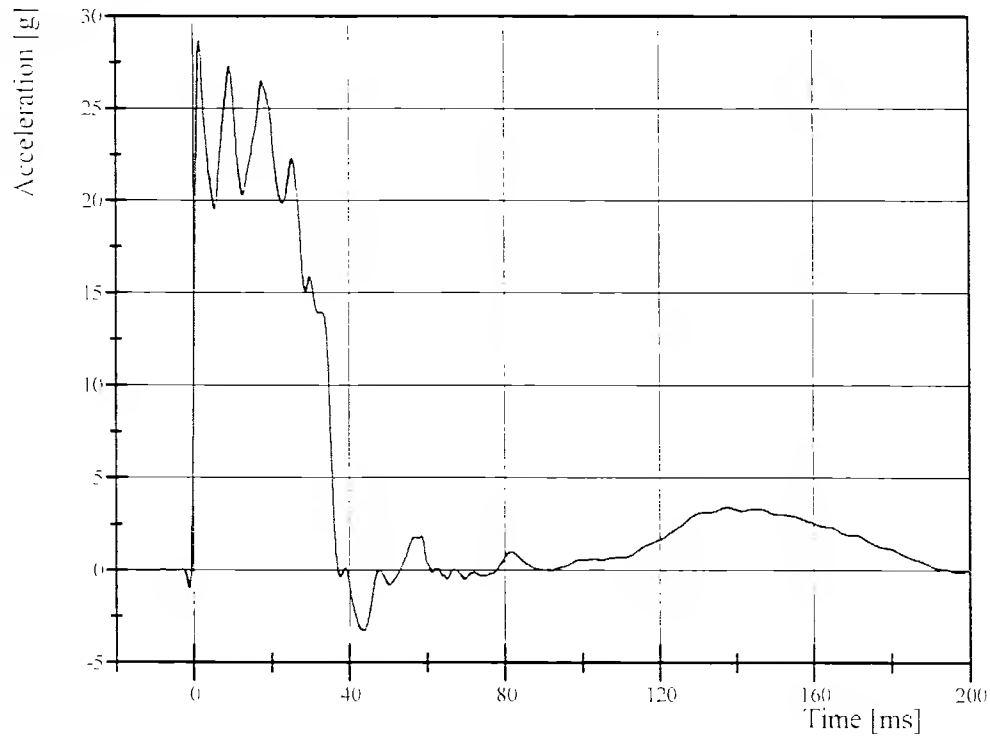
# Transportation Research Center Inc.

Left Lateral Neck

SID-HIII Serial No. 055 Certification No. 20-1

Test Date: 03/27/2006

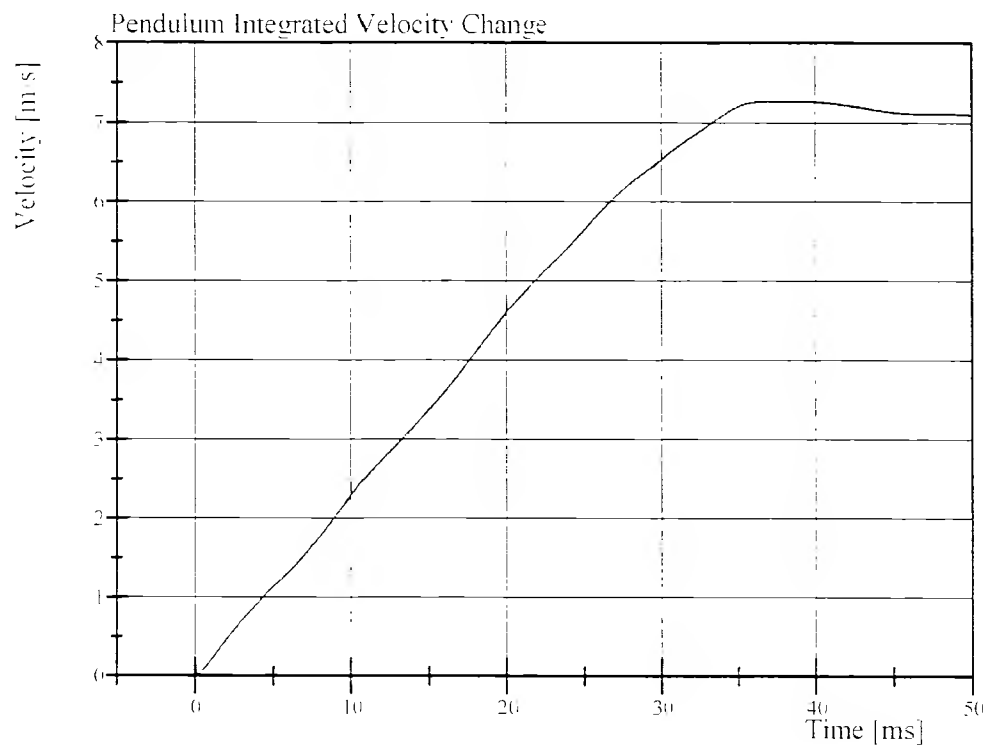
Pendulum Acceleration



Filter Class: CFC\_180

Max: 28.6 g at 1.4 ms

Min: -3.3 g at 43.5 ms



Filter Class: CFC\_180

Max: 7.3 m/s at 36.9 ms

Min: 0.0 m/s at 0.0 ms

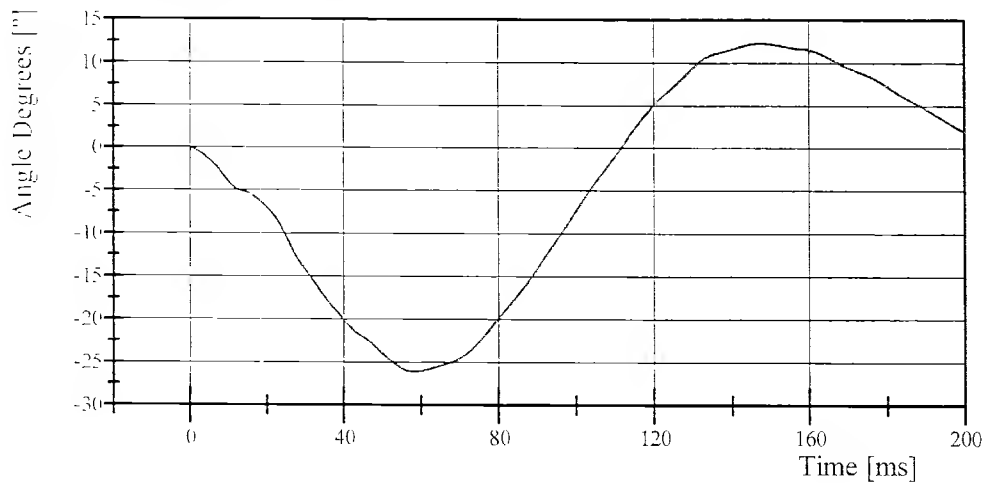
# Transportation Research Center Inc.

Left Lateral Neck

SID-HIII Serial No. 055 Certification No. 20-1

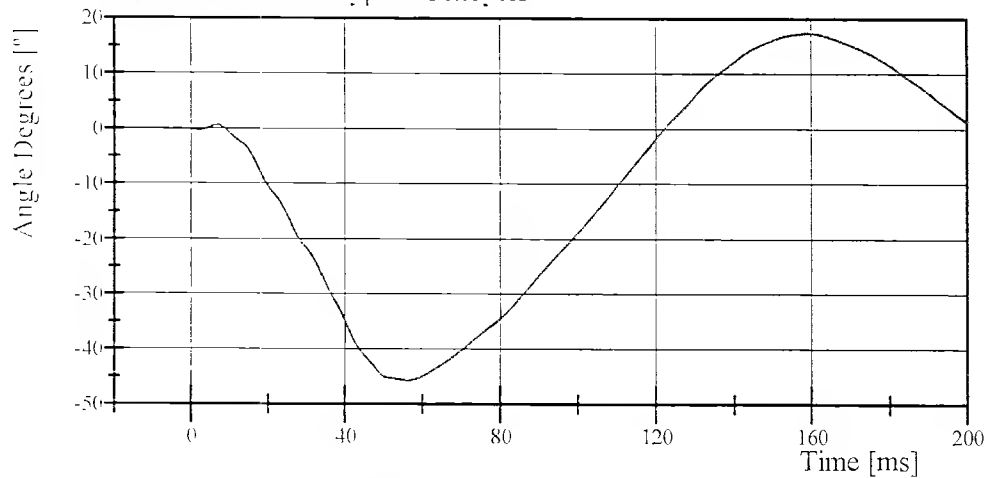
Test Date: 03/27/2006

Pot Rotation at the Base of Neck



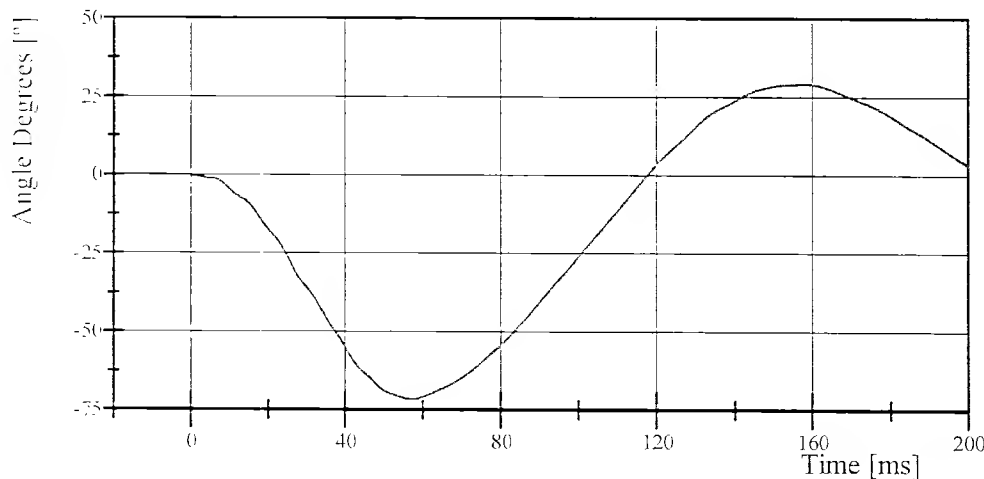
Filter Class: CFC\_60  
Max: 12.3 ° at 147.9 ms  
Min: -26.1 ° at 58.1 ms

Head Rotation at Occypital Condyles



Filter Class: CFC\_60  
Max: 17.4 ° at 159.4 ms  
Min: -45.7 ° at 56.2 ms

Total Head D-Plane Rotation



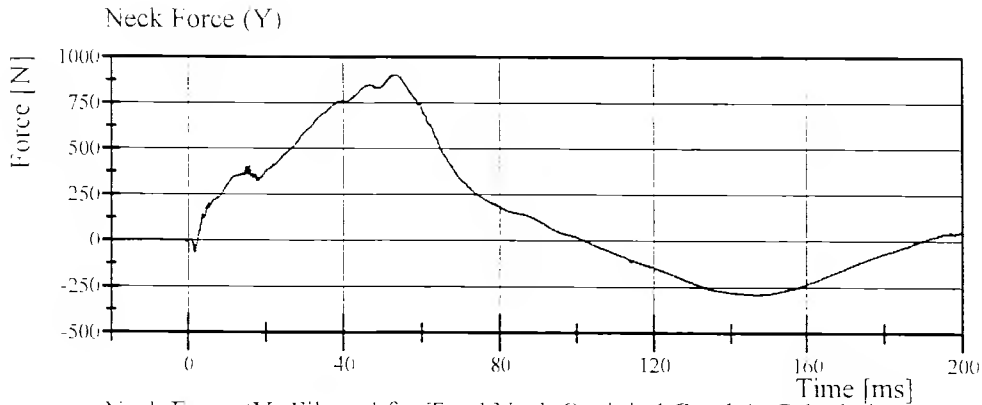
Filter Class: CFC\_60  
Max: 29.0 ° at 158.3 ms  
Min: -71.7 ° at 57.0 ms

# Transportation Research Center Inc.

Left Lateral Neck

SID-HIII Serial No. 055 Certification No. 20-1

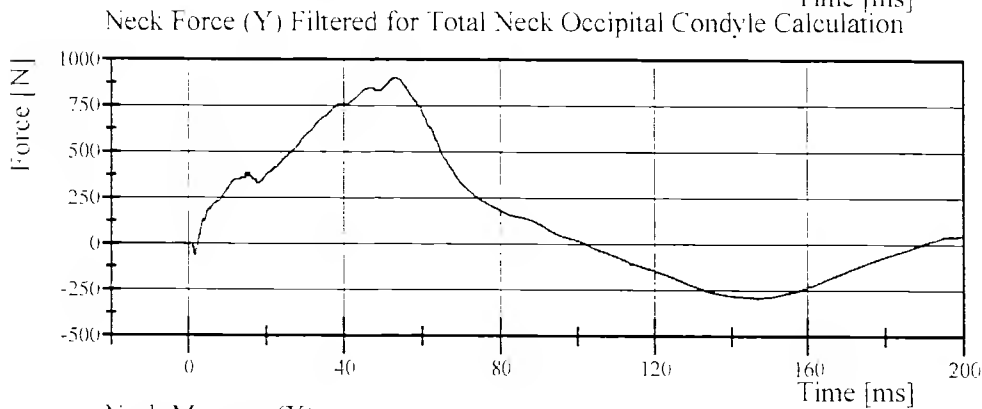
Test Date: 03/27/2006



Filter Class: CFC\_1000

Max: 901.9 N at 52.9 ms

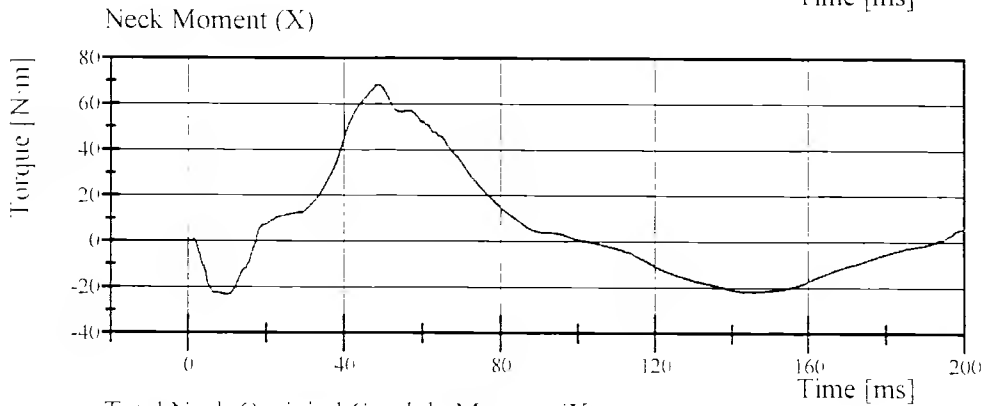
Min: -293.9 N at 146.4 ms



Filter Class: CFC\_600

Max: 901.5 N at 52.9 ms

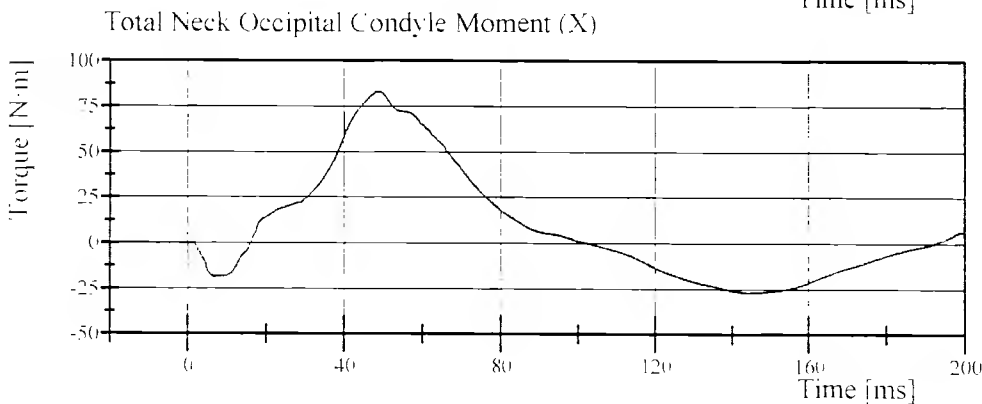
Min: -293.5 N at 146.4 ms



Filter Class: CFC\_600

Max: 68.3 N·m at 48.8 ms

Min: -23.3 N·m at 9.9 ms



Filter Class: CFC\_600

Max: 83.1 N·m at 48.8 ms

Min: -27.0 N·m at 145.0 ms

# Transportation Research Center Inc.

Abdomen Compression

SID-HHII Serial No. 055 Certification No. 20-5

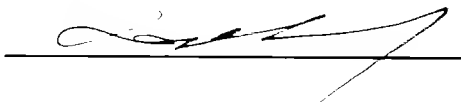
Test Date: 03/24/2006

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.5 °C	21.1 °C	Yes
Relative Humidity	10 - 70 %	27 %	Yes
Probe Force within Corridor	Yes	Yes	Yes
Probe Velocity	6.35 - 8.89 mm/s	7.887 mm/s	Yes

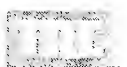
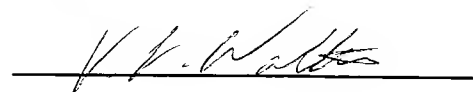
Test meets specifications.

Comments:

Technician



Approved





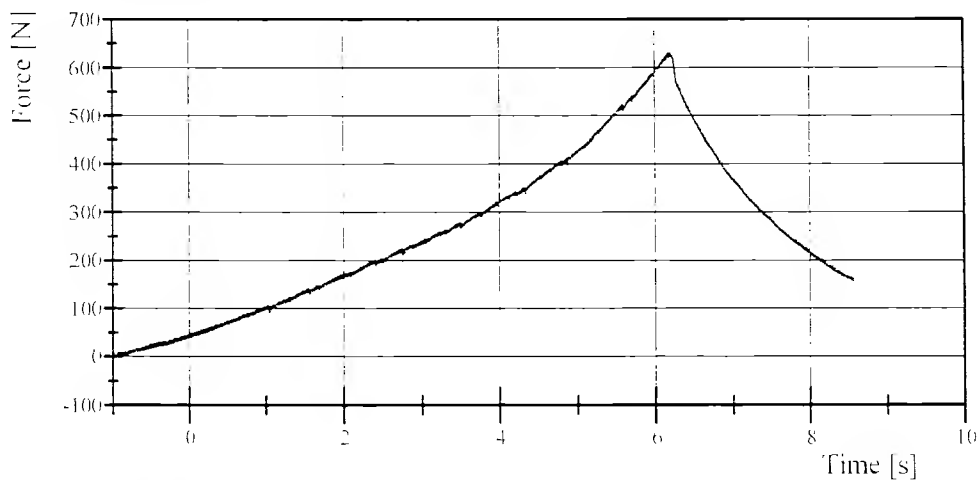
# Transportation Research Center Inc.

Abdomen Compression

SID-HIII Serial No. 055 Certification No. 20-5

Test Date: 03/24/2006

Probe Force

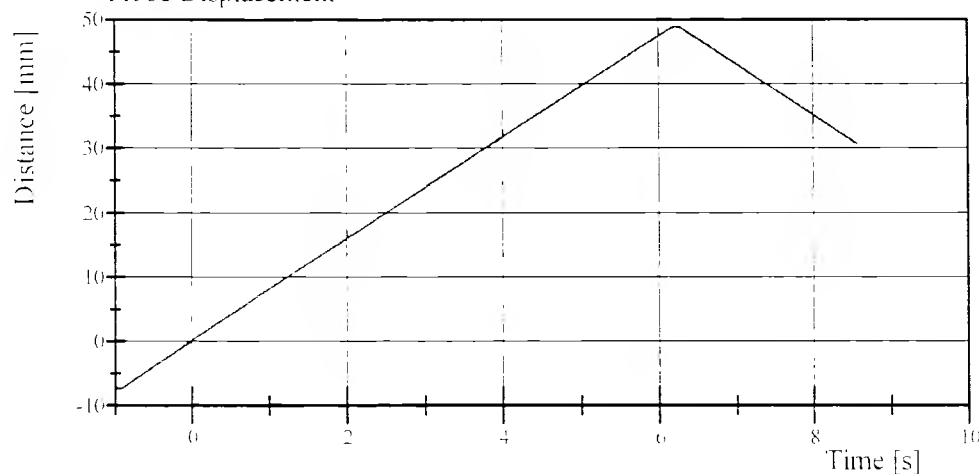


Filter Class: CFC\_600

Max: 629.6 N at 6.2 s

Min: -2.5 N at -1.0 s

Probe Displacement

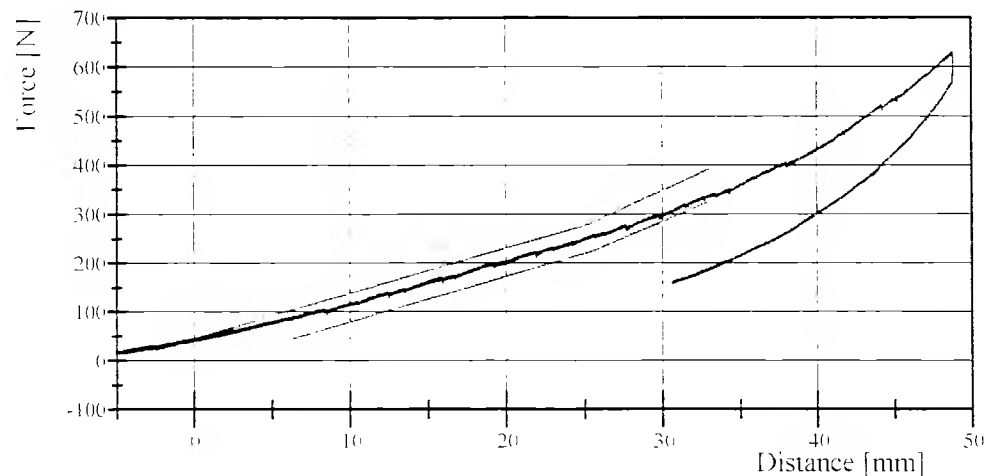


Filter Class: CFC\_180

Max: 48.8 mm at 6.2 s

Min: -7.4 mm at -1.0 s

Probe Force vs Displacement



Filter Class: CFC\_600

Max: 629.6 N at 48.7 mm

Min: -2.5 N at -7.4 mm

TRANSPORTATION RESEARCH CENTER INC.

PART 572B LUMBAR FLEXION TEST

SID/HIII

CAL DATE: 24-Mar-06

TRC, INC.

TEST NO: TOFL-01

572M SN 055 TORSO FLEX CAL 20

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9 – 25.6° C	21.3°C
RELATIVE HUMIDITY	10 – 70 %	26 %
FORCE AT 0 DEG. FLEXION	-27 – 27 N	0 N
FORCE AT 20 DEG OF FLEXION	98 – 151 N	129.0 N
FORCE AT 30 DEG OF FLEXION	151 – 205 N	169.0 N
FORCE AT 40 DEG OF FLEXION	205 – 258 N	213.5 N
NET RETURN ANGLE AFTER 3 MINUTES	< 12 °	11 °

TEST MEETS SPECIFICATIONS

TECHNICIAN



# Transportation Research Center Inc.

Left Lateral Thorax

SID-HIII Serial No. 055 Certification No. 20-1

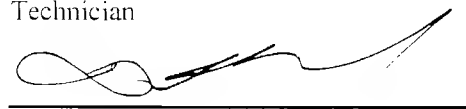
Test Date: 03/28/2006

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.6 °C	21.2 °C	Yes
Relative Humidity	10 - 70 %	32 %	Yes
Impactor Velocity	4.27 - 4.33 m/s	4.287 m/s	Yes
Upper Rib Lateral Acceleration	37 - 46 g	41.7 g	Yes
Lower Rib Lateral Acceleration	37 - 46 g	40.9 g	Yes
Lower Spine Lateral Acceleration	15 - 22 g	19.5 g	Yes

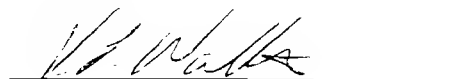
**Test meets specifications.**

Comments:

Technician



Approved



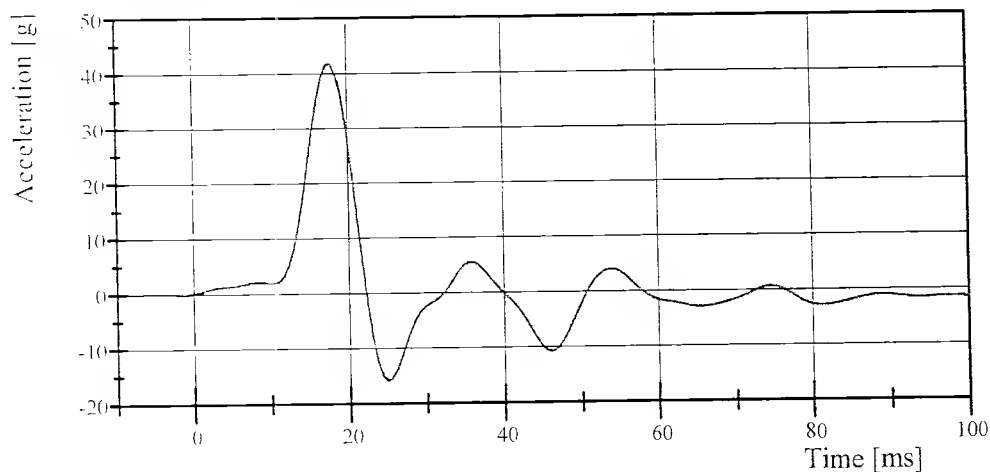
# Transportation Research Center Inc.

Left Lateral Thorax

SID-HIII Serial No. 055 Certification No. 20-1

Test Date: 03/28/2006

Upper Rib Acceleration (Y)

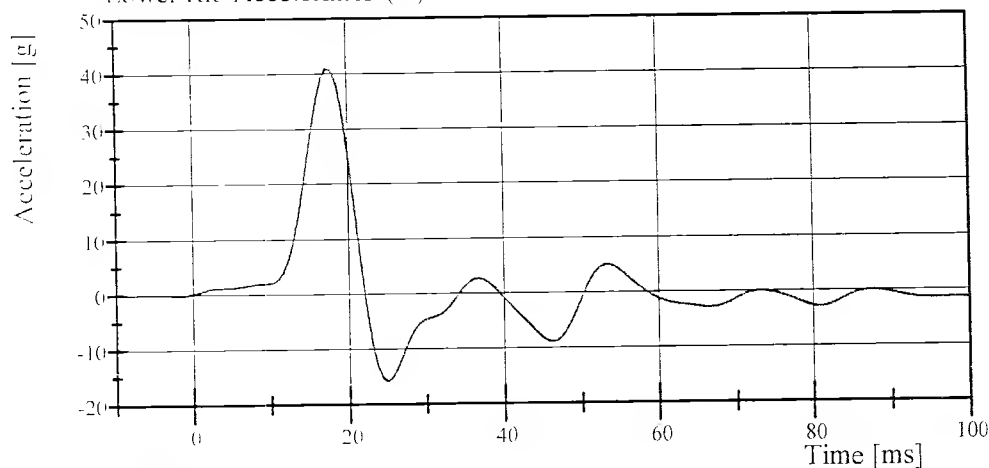


Filter Class: FIR\_100

Max: 41.7 g at 17.9 ms

Min: -15.9 g at 24.9 ms

Lower Rib Acceleration (Y)

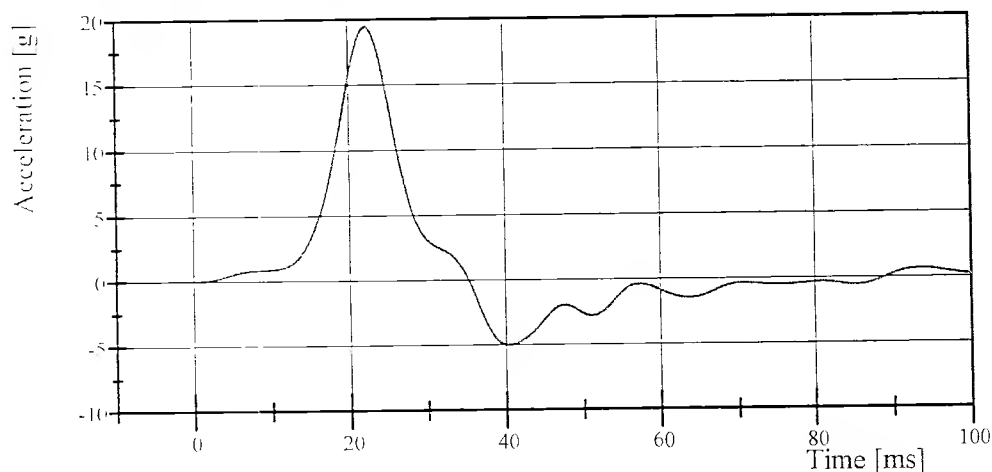


Filter Class: FIR\_100

Max: 40.9 g at 17.4 ms

Min: -15.8 g at 24.8 ms

Lower Spine Acceleration (Y)



Filter Class: FIR\_100

Max: 19.5 g at 22.3 ms

Min: -5.0 g at 40.5 ms

# Transportation Research Center Inc.

Left Lateral Pelvis

SID-HIII Serial No. 055 Certification No. 20-1

Test Date: 03/28/2006

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.5 °C	21.1 °C	Yes
Relative Humidity	10 - 70 %	31 %	Yes
Impactor Velocity	4.27 - 4.33 m/s	4.292 m/s	Yes
Pelvis Lateral Acceleration Duration above 20g	3 - 7 ms	5.8 ms	Yes
Pelvis Lateral Acceleration	40 - 60 g	52.3 g	Yes
Is Acceleration Curve Unimodal Above 20g?	Yes	Yes	Yes

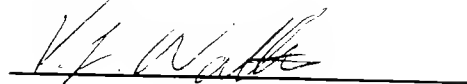
Test meets specifications.

Comments:

Technician



Approved

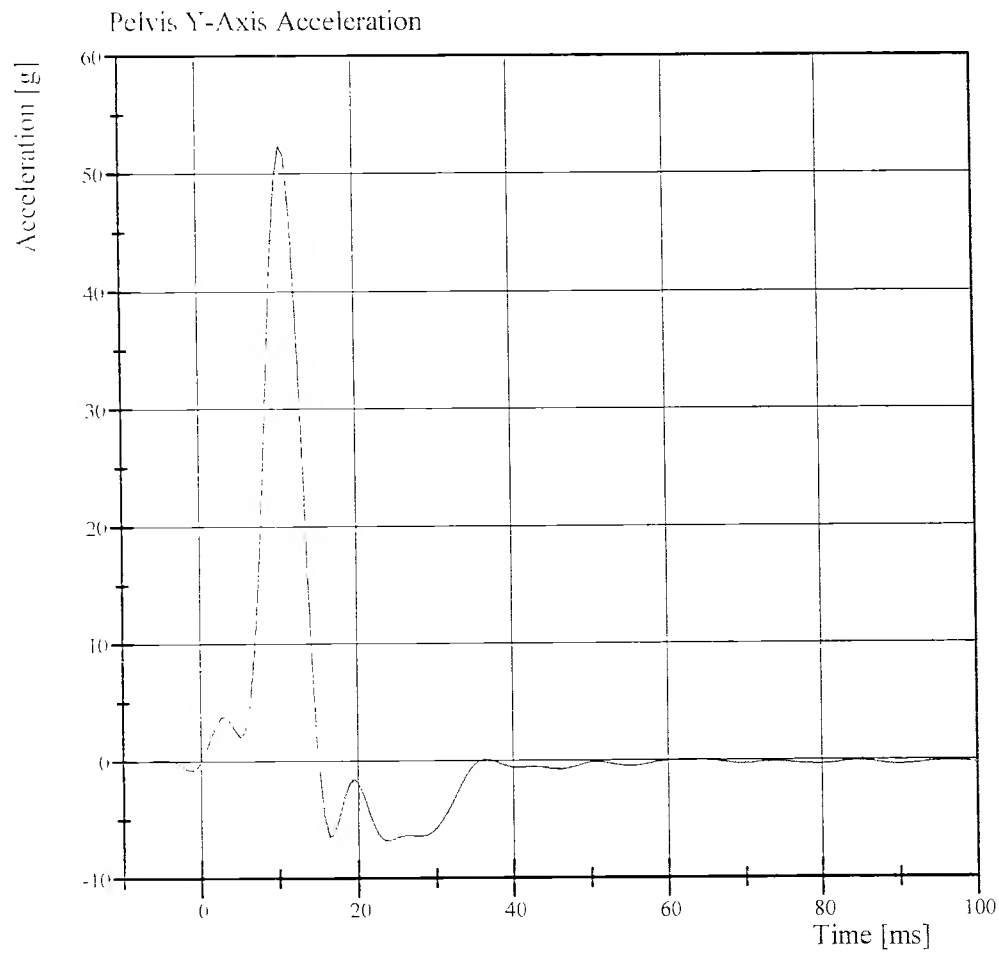


# Transportation Research Center Inc.

Left Lateral Pelvis

SID-HIII Serial No. 055 Certification No. 20-1

Test Date: 03/28/2006



Filter Class: FIR\_100  
Max: 52.3 g at 10.7 ms  
Min: -6.8 g at 23.8 ms

Calibration Test Results

Post-Test

SID HIII: 066

Configured for Left Side Impact

External Dimensions:	The dummy passed all external dimension requirements.
Lateral Thorax Impact Test:	The lateral thorax passed all impact test requirements.
Lumbar Flexion Test:	The dummy met the lumbar flexion test requirements.
Abdominal Compression Test:	The abdomen met the compression test requirements.
Pelvis Impact Test:	The lateral pelvis passed all impact test requirements.
Thoracic Shock Absorber Test:	The thoracic shock absorber was not tested at this time.



**Transportation Research Center Inc.**  
**572M SID/HIII Dummy**  
**External Dimensions**  
**Serial No. 066 Calibration No. 20**

Test Parameter	Dimension	Specification	Results	Pass
Seated Height	SH	889.0 - 909.3 mm	900 mm	Yes
Rib Height	RH	501.7 - 520.7 mm	507 mm	Yes
Hip Pivot Height	HP	99.1 REF mm	99.1 mm	
Knee Pivot From Backline	KH	510.5 - 525.8 mm	522 mm	Yes
Knee Pivot From Floor	KV	490.2 - 505.5 mm	496 mm	Yes
Hip Width	HW	355.6 - 391.2 mm	368 mm	Yes
Top Rib Width From C/L	RW-1	165.1 - 180.3 mm	173 mm	Yes
Bottom Rib Width From C/L	RW-2	165.1 - 180.3 mm	173 mm	Yes
Difference Between Top & Bottom Rib Width from C/L		<= 2.5 mm	0.0 mm	Yes

Technician

*Vincent*

Approved

*V.J. Walter*



# Transportation Research Center Inc.

Left Lateral Head Drop

SID-HIII Serial No. 066 Certification No. 20-1

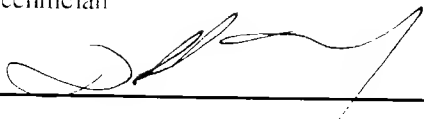
Test Date: 03/27/2006

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.6 °C	21.2 °C	Yes
Relative Humidity	10 - 70 %	28 %	Yes
Peak Head Resultant Acceleration	120 - 150 g	137.9 g	Yes
Peak Head Longitudinal Acceleration	(-15) - 15 g	4.6 g	Yes
Is Head Resultant Acceleration Curve Unimodal Within 15% of Peak?	Yes	Yes	Yes

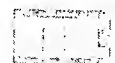
**Test meets specifications.**

**Comments:**

Technician



Approved

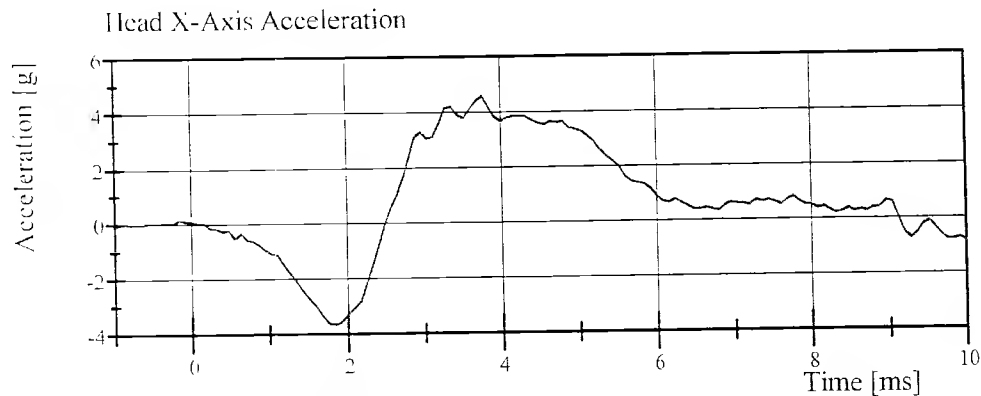


# Transportation Research Center Inc.

Left Lateral Head Drop

SID-HIII Serial No. 066 Certification No. 20-1

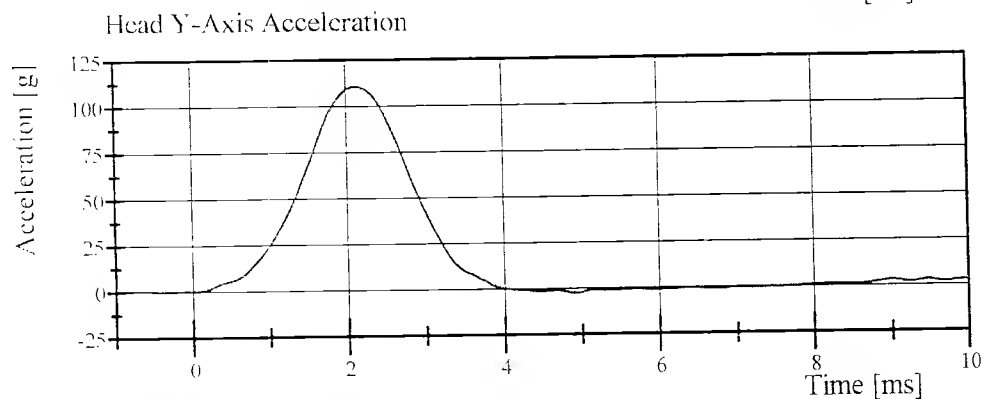
Test Date: 03/27/2006



Filter Class: CFC\_1000

Max: 4.6 g at 3.8 ms

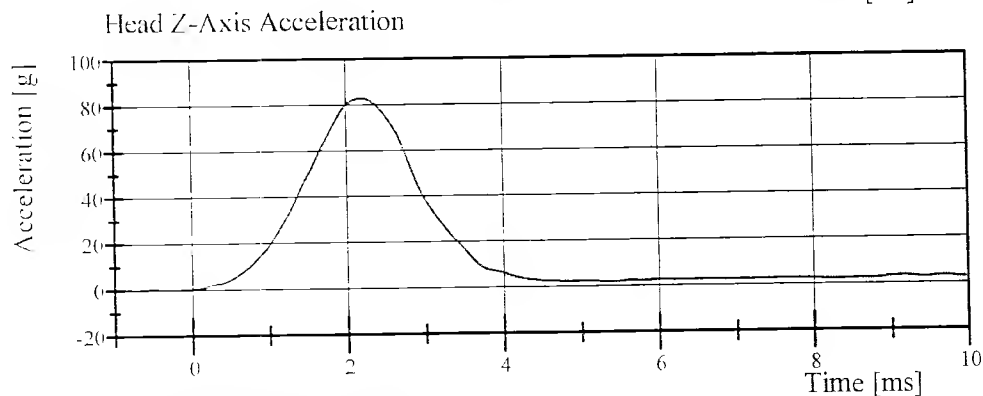
Min: -3.7 g at 1.8 ms



Filter Class: CFC\_1000

Max: 110.4 g at 2.1 ms

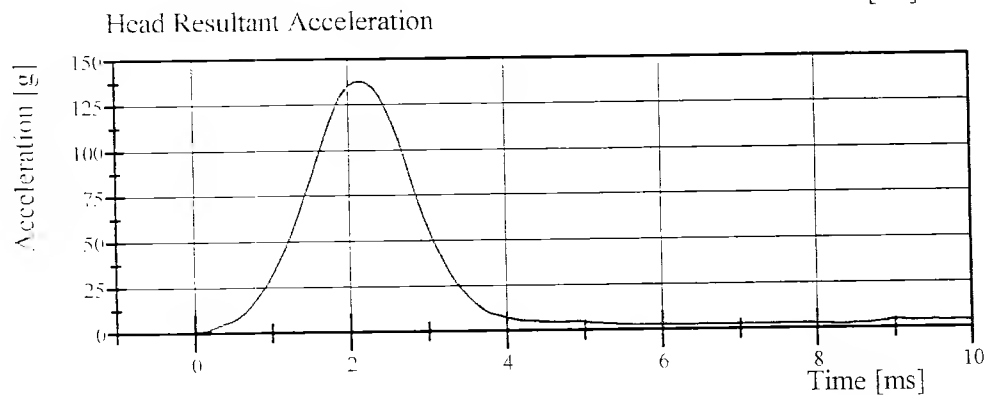
Min: -2.6 g at 5.0 ms



Filter Class: CFC\_1000

Max: 82.8 g at 2.2 ms

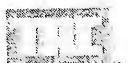
Min: -0.1 g at -0.8 ms



Filter Class: CFC\_1000

Max: 137.9 g at 2.2 ms

Min: 0.1 g at -0.3 ms



# Transportation Research Center Inc.

Left Lateral Neck

SID-HIII Serial No. 066 Certification No. 20-1

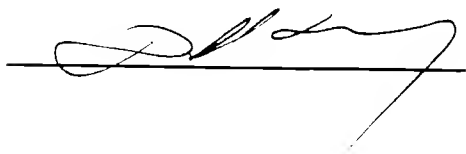
Test Date: 03/27/2006

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.6 °C	Yes
Relative Humidity	10 - 70 %	29 %	Yes
Pendulum Velocity	(-6.89) - (-7.13) m/s	-7.027 m/s	Yes
Pendulum Integrated Velocity Change at 10 ms	1.96 - 2.55 m/s	2.332 m/s	Yes
Pendulum Integrated Velocity Change at 20 ms	4.12 - 5.10 m/s	4.673 m/s	Yes
Pendulum Integrated Velocity Change at 30 ms	5.73 - 7.01 m/s	6.621 m/s	Yes
Pendulum Integrated Velocity Change at 40 to 70 ms	6.27 - 7.64 m/s	7.280 m/s	Yes
Total Head D-Plane Rotation	(-66) - (-82) °	-69.2 °	Yes
Total Head D-Plane Rotation Time to 0° after Peak Rotation	58 - 67 ms	59.4 ms	Yes
Total Neck Occipital Condyle Moment	73 - 88 N·m	80.8 N·m	Yes
Total Neck Occipital Condyle Moment Time to 0 N·m after Peak Moment	49 - 64 ms	52.2 ms	Yes
Time from Peak Moment to Peak Rotation	2 - 16 ms	8.2 ms	Yes


**Test meets specifications.**

**Comments:**

Technician



Approved



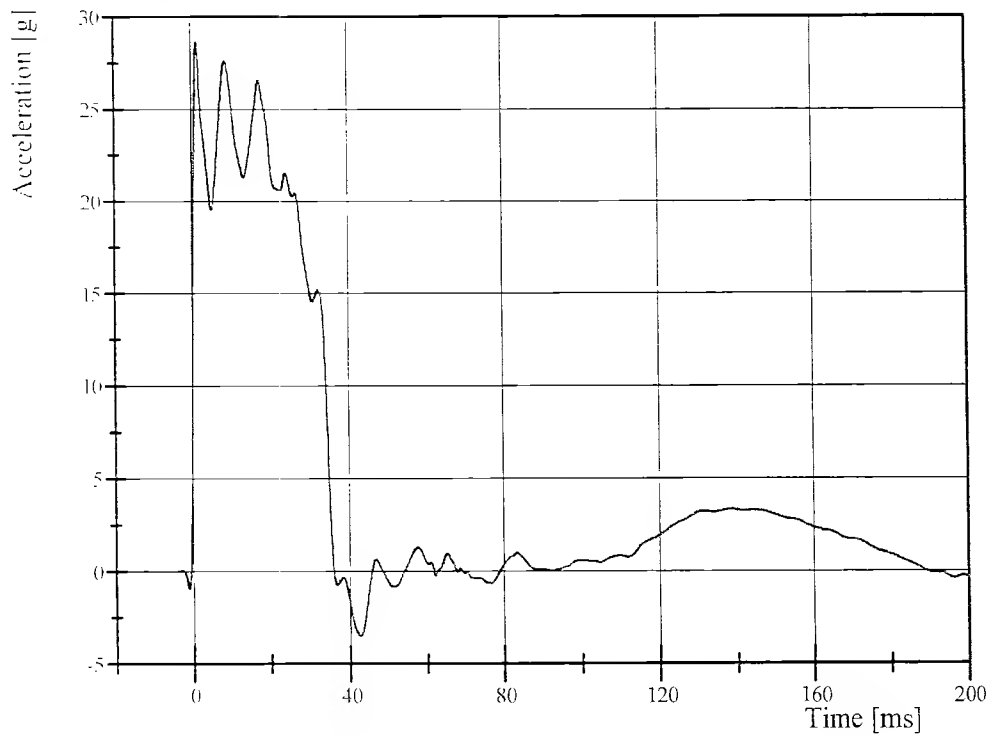
# Transportation Research Center Inc.

Left Lateral Neck

SID-HIII Serial No. 066 Certification No. 20-1

Test Date: 03/27/2006

Pendulum Acceleration

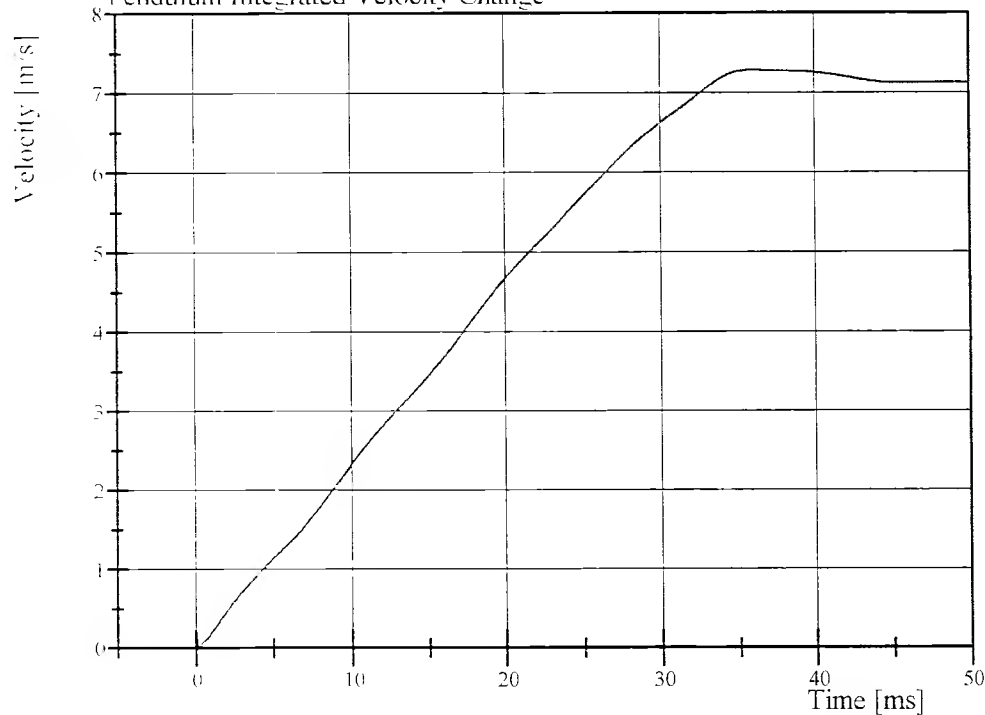


Filter Class: CFC\_180

Max: 28.6 g at 1.4 ms

Min: -3.5 g at 42.5 ms

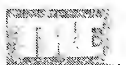
Pendulum Integrated Velocity Change



Filter Class: CFC\_180

Max: 7.3 m/s at 35.9 ms

Min: 0.0 m/s at 0.0 ms



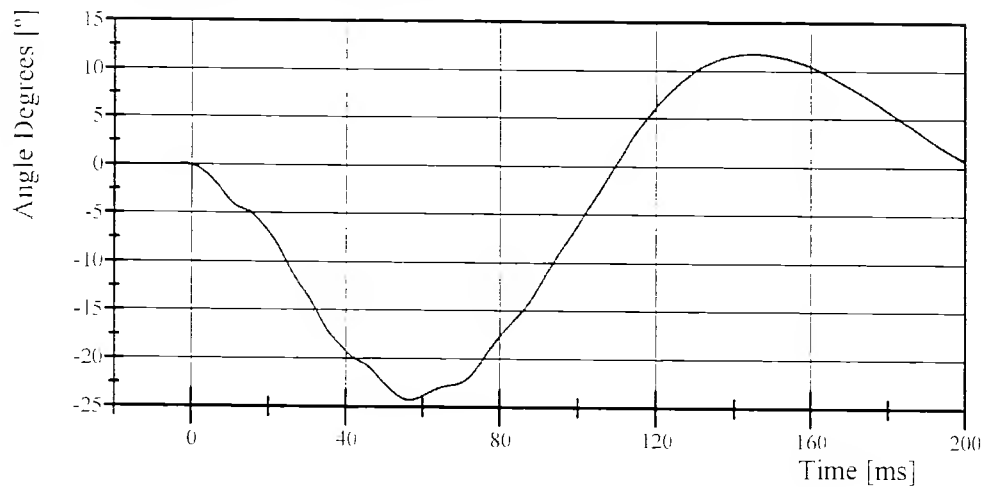
# Transportation Research Center Inc.

Left Lateral Neck

SID-HIII Serial No. 066 Certification No. 20-1

Test Date: 03/27/2006

Pot Rotation at the Base of Neck

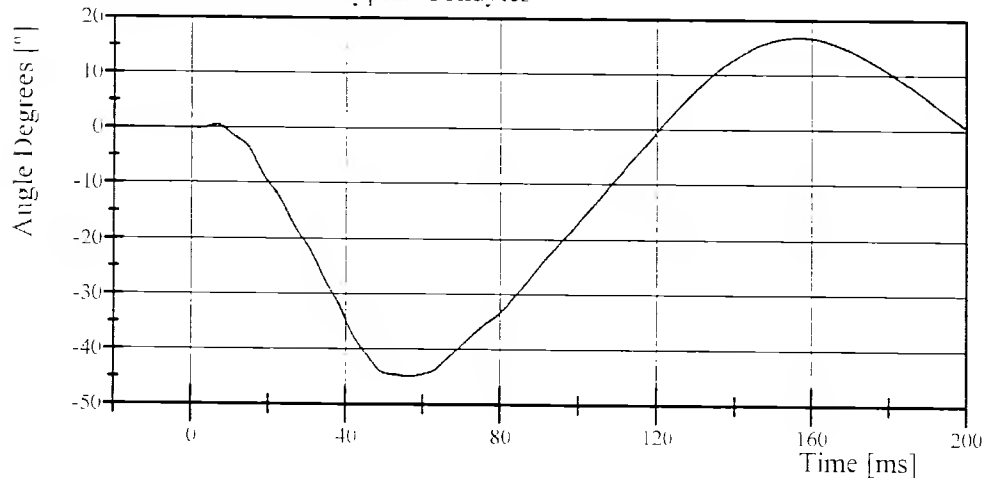


Filter Class: CFC\_60

Max: 11.8 ° at 145.0 ms

Min: -24.3 ° at 56.6 ms

Head Rotation at Occipital Condyles

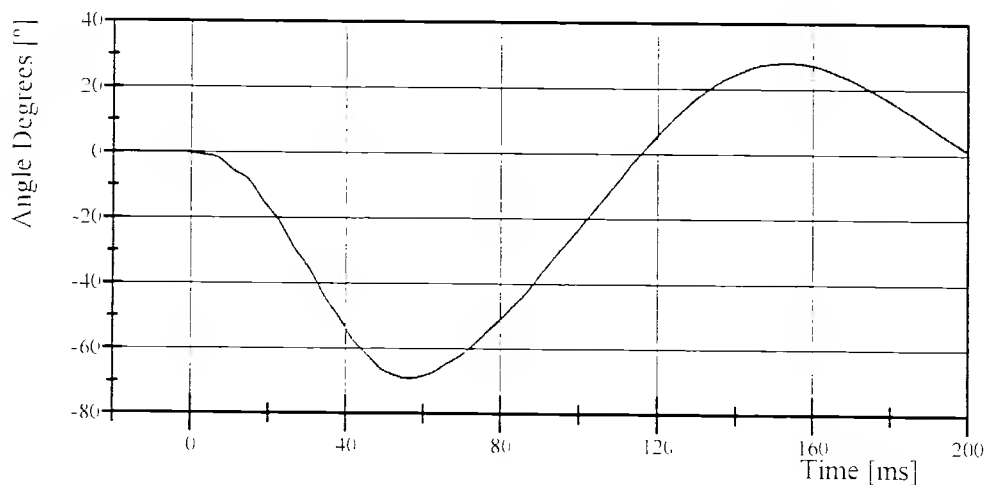


Filter Class: CFC\_60

Max: 16.8 ° at 156.3 ms

Min: -44.9 ° at 56.3 ms

Total Head D-Plane Rotation



Filter Class: CFC\_60

Max: 28.0 ° at 153.2 ms

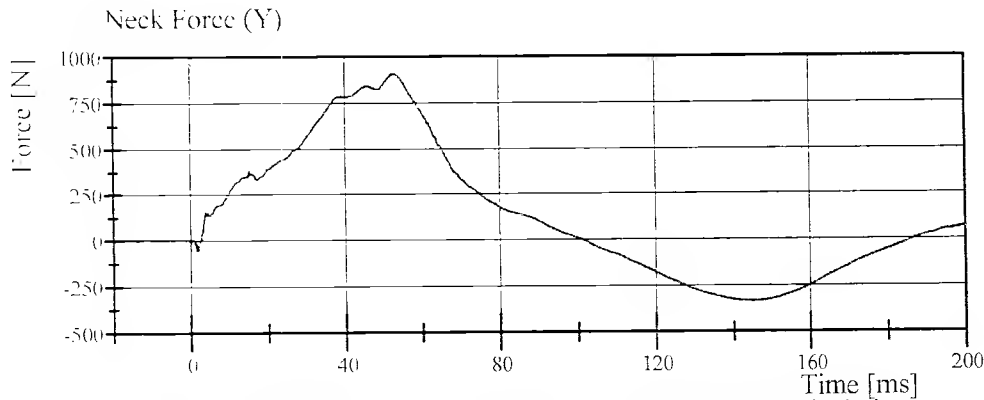
Min: -69.2 ° at 56.4 ms

# Transportation Research Center Inc.

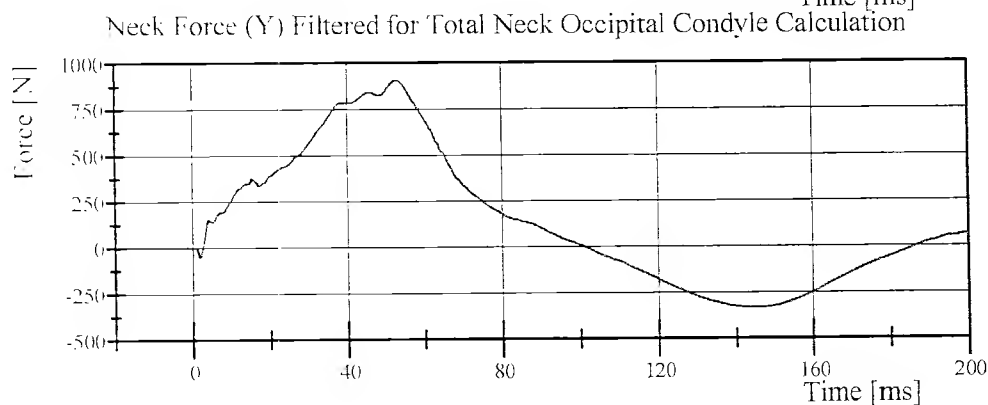
Left Lateral Neck

SID-HIII Serial No. 066 Certification No. 20-1

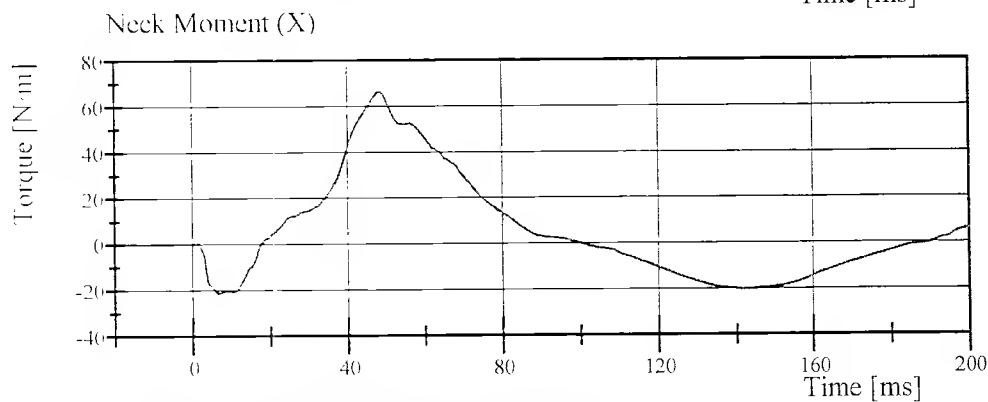
Test Date: 03/27/2006



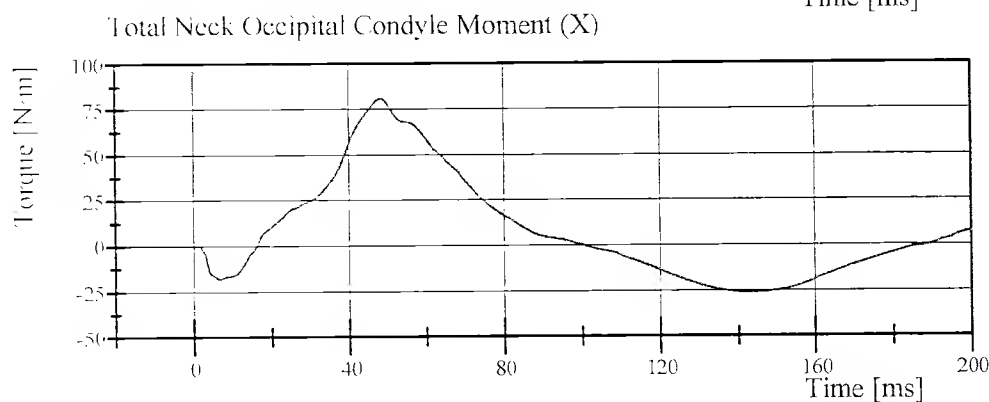
Filter Class: CFC\_1000  
Max: 907.0 N at 52.8 ms  
Min: -335.6 N at 145.0 ms



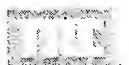
Filter Class: CFC\_600  
Max: 906.6 N at 52.9 ms  
Min: -335.2 N at 145.1 ms



Filter Class: CFC\_600  
Max: 66.2 N·m at 48.2 ms  
Min: -21.6 N·m at 6.7 ms



Filter Class: CFC\_600  
Max: 80.8 N·m at 48.2 ms  
Min: -26.1 N·m at 143.0 ms





# Transportation Research Center Inc.

Abdomen Compression

SID-HIII Serial No. 066 Certification No. 20-2

Test Date: 03/27/2006

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.5 °C	21.4 °C	Yes
Relative Humidity	10 - 70 %	28 %	Yes
Probe Force within Corridor	Yes	Yes	Yes
Probe Velocity	6.35 - 8.89 mm/s	7.809 mm/s	Yes

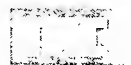
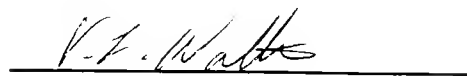
Test meets specifications.

Comments:

Technician



Approved

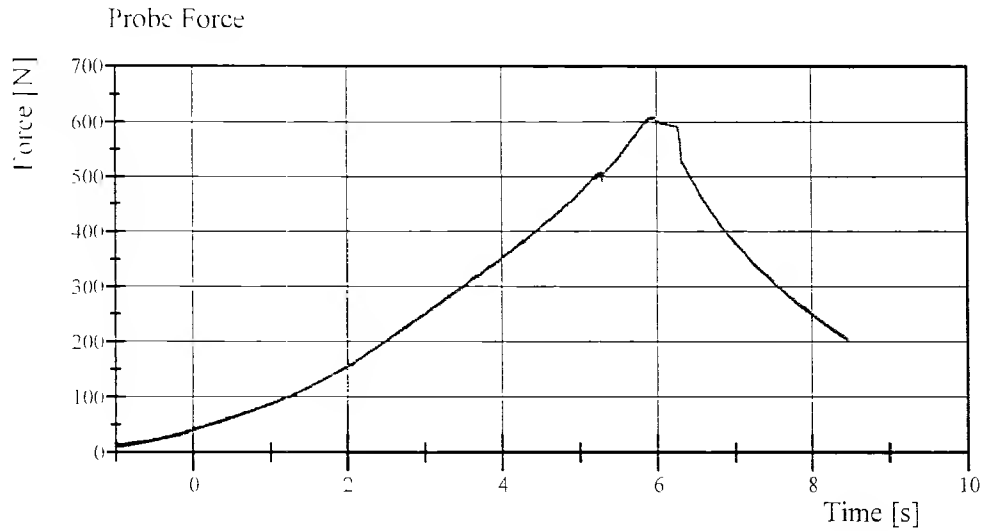


# Transportation Research Center Inc.

## Abdomen Compression

SID-HIII Serial No. 066 Certification No. 20-2

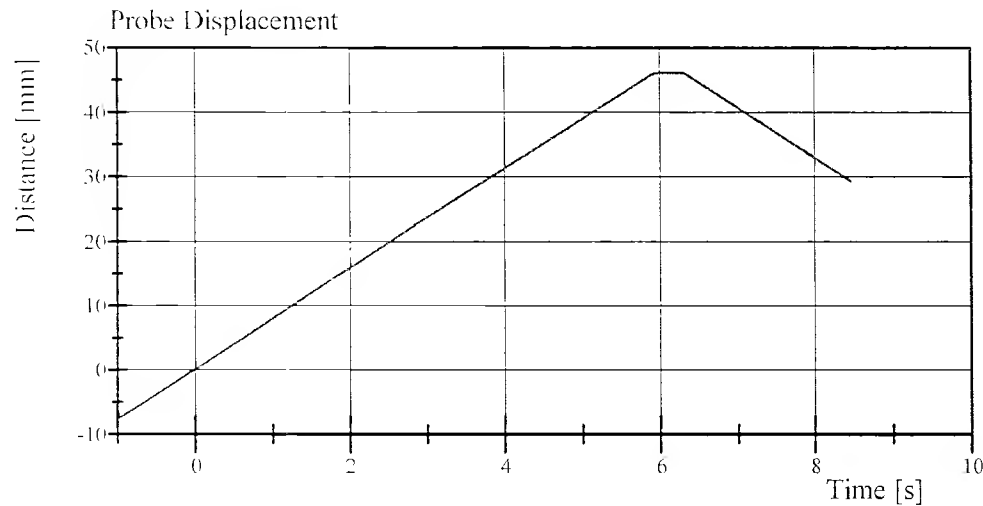
Test Date: 03/27/2006



Filter Class: CFC\_600

Max: 608.4 N at 5.9 s

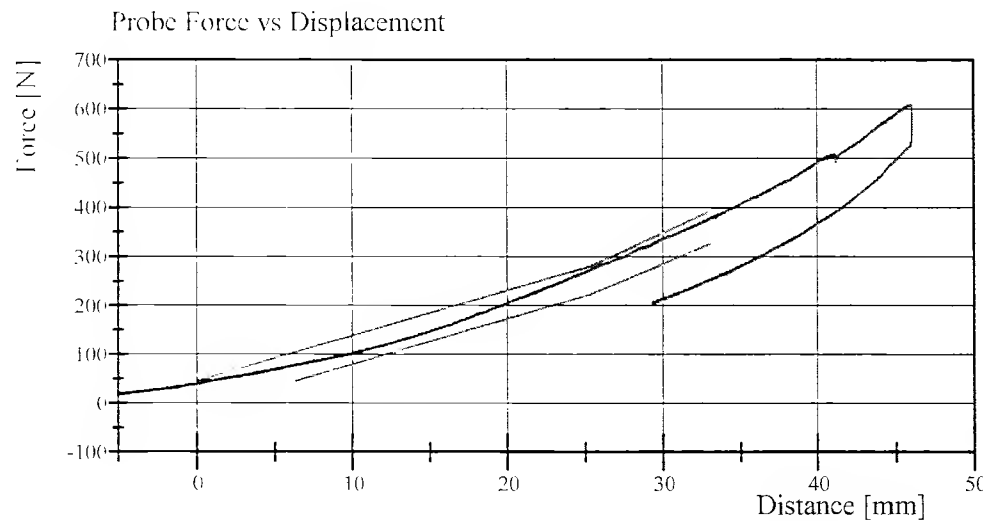
Min: 6.9 N at -1.0 s



Filter Class: CFC\_180

Max: 46.1 mm at 6.2 s

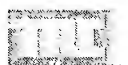
Min: -7.7 mm at -1.0 s



Filter Class: CFC\_600

Max: 608.4 N at 45.9 mm

Min: -0.7 N at -9.8 mm



TRANSPORTATION RESEARCH CENTER INC.

LUMBAR FLEXION TEST

SID PART 572B

CAL DATE: 27-Mar-06

TRC, INC.

TEST NO: TOFL-01

572B SN 066 TORSO FLEX CAL 20

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9 – 25.6° C	21.3 C
RELATIVE HUMIDITY	10 – 70 %	30 %
FORCE AT 0 DEG. FLEXION	-27 – 27 N	0 N
FORCE AT 20 DEG OF FLEXION	98 – 151 N	142.3 N
FORCE AT 30 DEG OF FLEXION	151 – 205 N	195.7 N
FORCE AT 40 DEG OF FLEXION	205 – 258 N	253.5 N
NET RETURN ANGLE AFTER 3 MINUTES	< 12 °	9.3 °

TEST MEETS SPECIFICATIONS

TECHNICIAN



# Transportation Research Center Inc.

Left Lateral Thorax

SID-HIII Serial No. 066 Certification No. 20-1

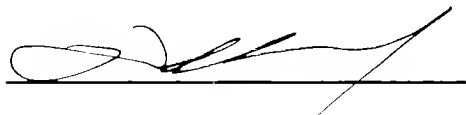
Test Date: 03/28/2006

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.6 °C	21.5 °C	Yes
Relative Humidity	10 - 70 %	32 %	Yes
Impactor Velocity	4.27 - 4.33 m/s	4.292 m/s	Yes
Upper Rib Lateral Acceleration	37 - 46 g	44.5 g	Yes
Lower Rib Lateral Acceleration	37 - 46 g	44.9 g	Yes
Lower Spine Lateral Acceleration	15 - 22 g	21.0 g	Yes

Test meets specifications.

Comments:

Technician



Approved



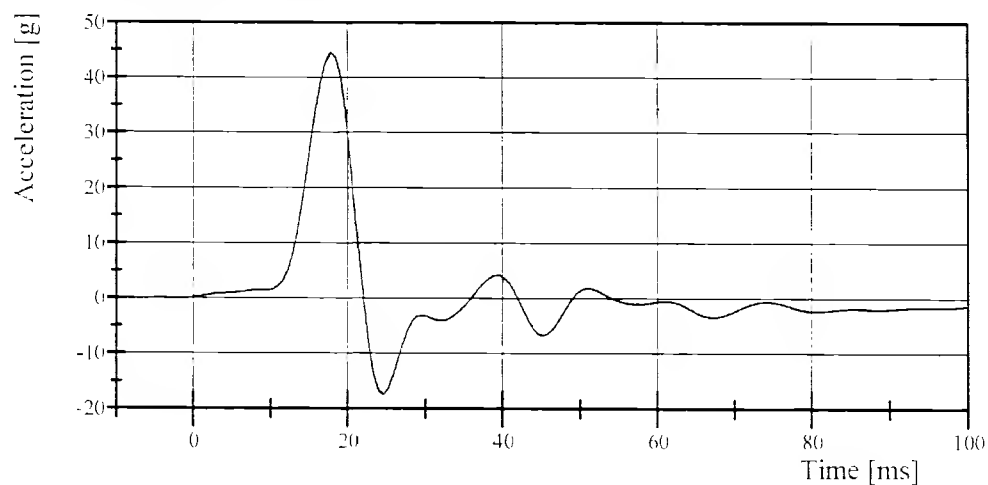
# Transportation Research Center Inc.

Left Lateral Thorax

SID-HIII Serial No. 066 Certification No. 20-1

Test Date: 03/28/2006

Upper Rib Acceleration (Y)

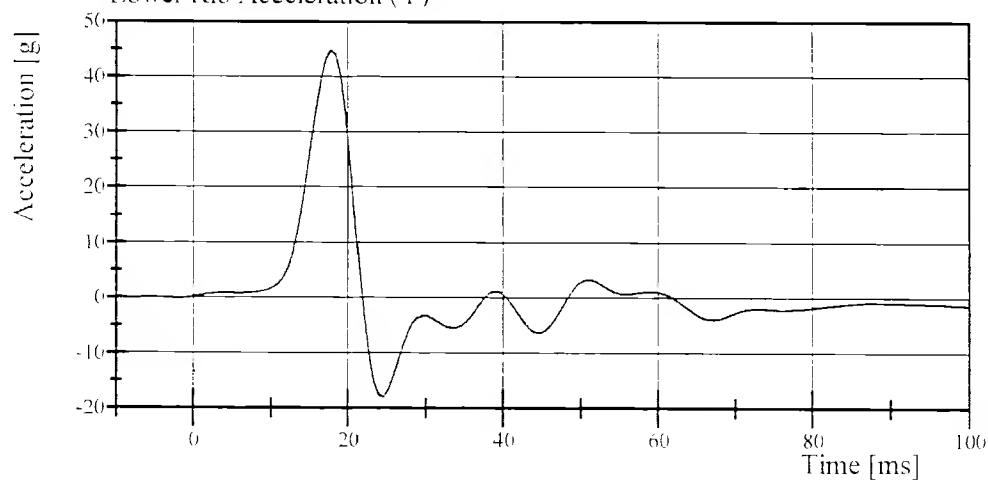


Filter Class: FIR\_100

Max: 44.5 g at 17.8 ms

Min: -17.4 g at 24.6 ms

Lower Rib Acceleration (Y)

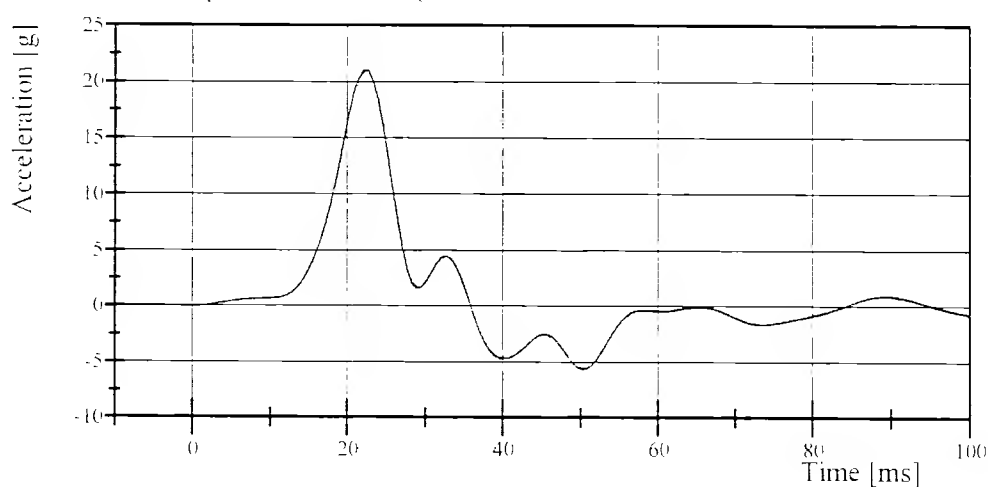


Filter Class: FIR\_100

Max: 44.9 g at 17.8 ms

Min: -18.0 g at 24.6 ms

Lower Spine Acceleration (Y)



Filter Class: FIR\_100

Max: 21.0 g at 22.2 ms

Min: -5.6 g at 50.2 ms

# Transportation Research Center Inc.

Left Lateral Pelvis

SID-HIII Serial No. 066 Certification No. 20-1

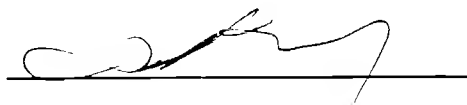
Test Date: 03/28/2006

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.5 °C	21.1 °C	Yes
Relative Humidity	10 - 70 %	32 %	Yes
Impactor Velocity	4.27 - 4.33 m/s	4.297 m/s	Yes
Pelvis Lateral Acceleration Duration above 20g	3 - 7 ms	6.1 ms	Yes
Pelvis Lateral Acceleration	40 - 60 g	48.0 g	Yes
Is Acceleration Curve Unimodal Above 20g?	Yes	Yes	Yes

Test meets specifications.

Comments:

Technician



Approved

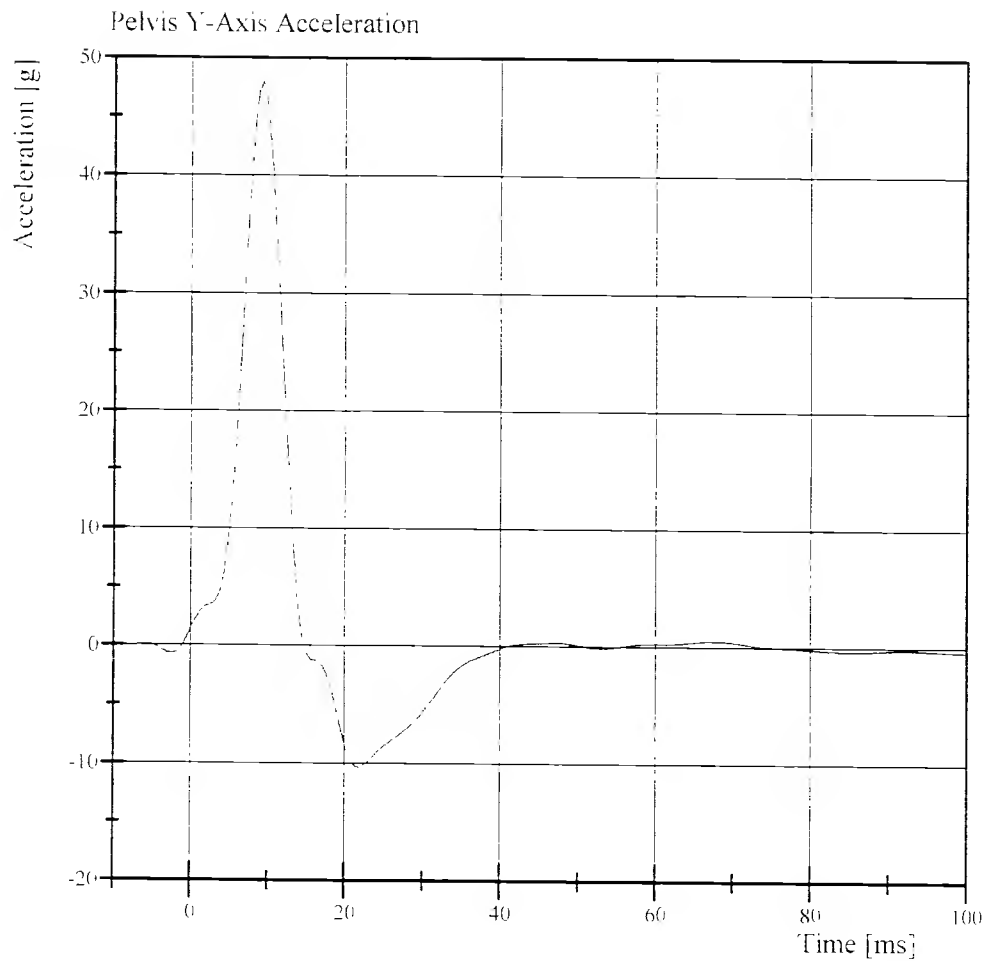


# Transportation Research Center Inc.

Left Lateral Pelvis

SID-HIII Serial No. 066 Certification No. 20-1

Test Date: 03/28/2006



Filter Class: FIR\_100  
Max: 48.0 g at 9.4 ms  
Min: -10.4 g at 21.8 ms



Type: SID HHH S/N: 055 Mfr: ASTC Test Date: 03/20/06  
 Proj./Seg. No.: 20020455-3000 Test Eng.: Walter Dudek

ITEM	PRE-USE	
<b>HEAD:</b>		
Skull Cap Bolts	X	
Head Skin Condition	X	
	(Left)	(Right)
Accel. Cable Exit (left or right)	N/A	
<b>NECK:</b>		
Rubber Condition and Separation From End Caps	X	
<b>NECK-SID/HHH only:</b>		
Condyle Pin, Set Screws	X	
* Neck Cable Torque (10-14 in lb) Actual: 12	X	
* Nodding Blocks Condition and Position	X	
<b>THORAX: Left side configuration</b>		
Stacked Shoulder Foams and Bolts	X	
* Rib Cage Spring and Support Assembly	X	
* Rib Cage Bolts	X	
* Damper Rear Attachment Ring, Pivot Pins, and Bracket	X	
* Location and Adjustment of Chest Pot Bracket and Collars	X	
* Chest Pot Rod End Nuts and Eyebolt	X	
Arm Foam Orientation	X	
Thorax/Lumbar Spine Bolts	X	
<b>PELVIS:</b>		
Tightness and Alignment of H-Point Tool Insert	X	
* Hips Range of Motion and 1-2g Adjustment (before calibration only)	X	
Upper Femur Bolt Adjustment and Position	X	
	(With)	(Without)
Check Spine Kits (Yellow tape = Kits/No tape = No kits)	X	
<b>LEGS AND FEET:</b>		
Femur Load Cell Bolts (30 ft/lbs)	X	
Breakaway Femur Bolts	X	
Knee Joint Function and Range of Motion	X	
Leg Skin Condition and Position	X	
Ankle Range of Motion	X	
Foot Condition	X	
<b>OTHER:</b>		
Cleanliness	X	
Target Position	X	
Clothes	X	
Shoes	X	
Knee & Ankle One G Joint Adjustments	X	

Inspection Completed By: J. Clarridge Date: 03/18/06

Transportation Research Center Inc.

SID Pre-Use Inspection

Type: SID HIII S/N: 066 Mfr: Denton Test Date: 03/20/06

Proj./Seg. No.: 20020455-3000 Test Eng.: Walter Dudek

ITEM		PRE-USE	
HEAD:			
Skull Cap Bolts		X	
Head Skin Condition		X	
Accel. Cable Exit (left or right)		(Left) N/A	(Right)
NECK:			
Rubber Condition and Separation From End Caps		X	
NECK-SID/HIII only:			
Condyle Pin. Set Screws		X	
* Neck Cable Torque	(10-14 in lb)      Actual: 12	X	
* Nodding Blocks Condition and Position		X	
THORAX: Left side configuration			
Stacked Shoulder Foams and Bolts		X	
* Rib Cage Spring and Support Assembly		X	
* Rib Cage Bolts		X	
* Damper Rear Attachment Ring, Pivot Pins, and Bracket		X	
* Location and Adjustment of Chest Pot Bracket and Collars		X	
* Chest Pot Rod End Nuts and Eyebolt		X	
Arm Foam Orientation		X	
Thorax/Lumbar Spine Bolts		X	
PELVIS:			
Tightness and Alignment of H-Point Tool Insert		X	
* Hips Range of Motion and 1-2g Adjustment (before calibration only)		X	
Upper Femur Bolt Adjustment and Position		X	
Check Spine Kits (Yellow tape = Kits/No tape = No kits)		(With) X	(Without)
LEGS AND FEET:			
Femur Load Cell Bolts	(30 ft/lbs)	X	
Breakaway Femur Bolts		X	
Knee Joint Function and Range of Motion		X	
Leg Skin Condition and Position		X	
Ankle Range of Motion		X	
Foot Condition		X	
OTHER:			
Cleanliness		X	
Target Position		X	
Clothes		X	
Shoes		X	
Knee & Ankle One G Joint Adjustments		X	

Inspection Completed By: J. Clarridge

Date: 03/18/06

Transportation Research Center Inc.

SID Post-Use Inspection

Type: SID IIII S/N: 055 Mfr: ASTC Test Date: 03/20/06Proj./Seg. No.: 20020455-3000 Test Eng.: Walter Dudek

ITEM	POST-USE
<b>HEAD:</b>	
Head Skin Condition	X
<b>NECK:</b>	
Rubber Condition and Separation From End Caps	X
<b>NECK-SID/IIII only:</b>	
Nodding Blocks Condition and Position	X
Nodding Joint Function (no lateral motion)	X
<b>THORAX: Left side configuration</b>	
Jacket Condition	X
Arm Foam Condition	X
Damper and Chest Pot Movement and Condition	X
Rib Cage Spring and Support Assembly Condition	X
Rib Wrap Condition	X
Abdomen Condition	X
Thorax/Lumbar Spine Bolts	X
Lumbar Spine Condition and Separation From End Caps	X
<b>PELVIS:</b>	
Iliac Crest Bone	X
Flesh Condition	X
Hip Range of Motion	X
<b>LEGS AND FEET:</b>	
Knee Skins and Castings Condition	X
Leg Skin Condition	X
Foot Condition	X
Knee Joint Range of Motion	X
Ankle Range of Motion	X

NOTES: No damage to report.

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\_\_\_\_\_  
\_\_\_\_\_  
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Inspection Completed By: J. ClarridgeDate: 03/23/06

Transportation Research Center Inc.

SID Post-Use Inspection

Type: SID HIII S/N: 066 Mfr: Denton Test Date: 03/20/06  
 Proj./Seg. No.: 20020455-3000 Test Eng.: Walter Dudek

ITEM	POST-USE
<b>HEAD:</b>	
Head Skin Condition	X
<b>NECK:</b>	
Rubber Condition and Separation From End Caps	X
<b>NECK-SID/HIII only:</b>	
Nodding Blocks Condition and Position	X
Nodding Joint Function (no lateral motion)	X
<b>THORAX:</b> Left side configuration	
Jacket Condition	X
Arm Foam Condition	X
Damper and Chest Pot Movement and Condition	X
Rib Cage Spring and Support Assembly Condition	X
Rib Wrap Condition	X
Abdomen Condition	X
Thorax/Lumbar Spine Bolts	X
Lumbar Spine Condition and Separation From End Caps	X
<b>PELVIS:</b>	
Iliac Crest Bone	X
Flesh Condition	X
Hip Range of Motion	X
<b>LEGS AND FEET:</b>	
Knee Skins and Castings Condition	X
Leg Skin Condition	X
Foot Condition	X
Knee Joint Range of Motion	X
Ankle Range of Motion	X

NOTES: Neck - small cut on 2<sup>nd</sup> rib from top (left).

No other damage found.

Inspection Completed By: J. Clarridge

Date: 03/23/06

Appendix D

Test Equipment List and Calibration Information

Sign Convention  
SAE J211 MAR95

Accelerometers:

- +X: Forward
- +Y: Rightward
- +Z: Downward

Potentiometers:

- +Chest longitudinal deflection: Outward
- +Chest lateral deflection: Rightward
- +Seat belt displacement: Outward
- +Seat belt extension: Elongation
- +Knee slider displacement: Distance between femur and tibia increased (in relation to a seated dummy)

Rotation potentiometers:

- +About the X-axis: Left foot-eversion  
Right foot-inversion
- +About the Y-axis: Left/right foot-dorsiflexion
- +About the Z-axis: Left foot-internal  
Right foot-external

Load cells:

- +Femur force: Tension
- +Seat belt force: Tension
- +Barrier force: Tension

Neck load cells:

- +X force: Head pushed rearward
- +Y force: Head pushed leftward
- +Z force: Head pulled upward (tension on neck)
- +X moment: Left ear rotating toward left shoulder
- +Y moment: Chin rotating toward chest
- +Z moment: Chin rotating toward left shoulder

Tibia load cells:

- +X force: Ankle forward. knee rearward
- +Y force: Ankle rightward. knee leftward
- +Z force: Tension
- +X moment: Bottom of tibia moving leftward
- +Y moment: Bottom of tibia moving rearward

Sign Convention (Continued)  
SAE J211 MAR95

<u>Lumbar load cells:</u>	+X force:	Chest rearward, pelvis forward
	+Y force:	Chest leftward, pelvis rightward
	+Z force:	Chest upward, pelvis downward
	+X moment:	Left shoulder toward left hip
	+Y moment:	Sternum toward front of legs
	+Z moment:	Right shoulder forward, left shoulder rearward

Frequency Response Classes  
SAE J211 MAR95

<u>Typical Test Measurements</u>	<u>Channel Class</u>
Vehicle Structural Accelerations for use in:	
Total vehicle comparison	60
Collision simulation input	60
Component analysis	600
Integration for velocity or displacement	180
Barrier Face Forces	60
Belt Restraint System Loads	60
Anthropomorphic Test Device	
Head accelerations (linear and angular)	1000
Neck	
Forces	1000
Moments	600
Thorax	
Spine accelerations	180
Rib accelerations	1000
Sternum accelerations	1000
Deflections	600
Lumbar	
Forces	1000
Moments	1000
Pelvis	
Accelerations	1000
Forces	1000
Moments	1000
Femur/Knee/Tibia/Ankle	
Forces	600
Moments	600
Displacements	180
Sled Accelerations	60
Steering Column Loads	600
Head Form Accelerations	1000



The direction column on the following sheets describes the transducer output as mounted and wired in the test location. The polarity column indicates whether a polarity change occurred during data acquisition to conform to J211 MAR95. See Report Sign Convention sheet for description of data output as presented in the report: occasionally channels have been adjusted in post-acquisition processing to conform to J211 MAR95.

# Channel Report Test Number 060320

Ref	Transducer ID	ISO Signal Identifier	Description	FScale	Units	DAS		Assembly
						Flip	Positive Polarity	
1	Trig D1	10ZERO000000VO0A	EVENT		1 Logic	+	Bipolar	
2	P49045	11HEADCG00SHACXA	Head Accel X	1000	g	-	Rearward	1-055 SID/HIII ASTC.001
3	P49057	11HEADCG00SHACYA	Head Accel Y	1000	g	-	Leftward	1-055 SID/HIII ASTC.002
4	P49037	11HEADCG00SHACZA	Head Accel Z	1000	g	-	Upward	1-055 SID/HIII ASTC.003
5	P49050	11HEADCGRDSHACXA	Head Accel X Red	1000	g	-	Rearward	1-055 SID/HIII ASTC.004
6	P46511	11HEADCGRDSHACYA	Head Accel Y Red	1000	g	-	Leftward	1-055 SID/HIII ASTC.005
7	P49021	11HEADCGRDSHACZA	Head Accel Z Red	1000	g	-	Upward	1-055 SID/HIII ASTC.006
8	1716A-1634-FX	11NECKUP00SHFOXA	Neck Force X	8896	N	-	Head forward, chest rearward	1-055 SID/HIII ASTC.007
9	1716A-1634-FY	11NECKUP00SHFOYA	Neck Force Y	8896	N	+	Head leftward, chest rightward	1-055 SID/HIII ASTC.008
10	1716A-1634-FZ	11NECKUP00SHFOZA	Neck Force Z	13344	N	+	Head upward, chest downward	1-055 SID/HIII ASTC.009
11	1716A-1634-MX	11NECKUP00SHMOXA	Neck Moment X	282	N-m	-	Right ear toward right shoulder	1-055 SID/HIII ASTC.010
12	1716A-1634-MY	11NECKUP00SHMOYA	Neck Moment Y	282	N-m	+	Chin toward sternum	1-055 SID/HIII ASTC.011
13	1716A-1634-MZ	11NECKUP00SHMOZA	Neck Moment Z	282	N-m	+	Chin toward left shoulder	1-055 SID/HIII ASTC.012
14	P46524	11RIBSLU00SHACYA	Left Upper Rib Y	800	g	+	Rightward	1-055 SID/HIII ASTC.013
15	P45008	11RIBSLURESHACYA	Left Upper Rid Red Y	800	g	+	Rightward	1-055 SID/HIII ASTC.014
16	P49030	11RIBSLL00SHACYA	Left Lower Rib Y	800	g	+	Rightward	1-055 SID/HIII ASTC.015
17	P46513	11RIBSLLRESHACYA	Left Lower Rib Red Y	800	g	+	Rightward	1-055 SID/HIII ASTC.016
18	P49029	11SPIN1200SHACYA	Lower Spine Y	400	g	-	Leftward	1-055 SID/HIII ASTC.017
19	P49036	11SPIN12RDSHACYA	Lower Spine Red Y	400	g	-	Leftward	1-055 SID/HIII ASTC.018
20	P49018	11PELVCG00SHACYA	Pelvis Accel Y	400	g	-	Leftward	1-055 SID/HIII ASTC.019
21	P45012	14HEADCG00SHACXA	Head Accel X	1000	g	-	Rearward	4-066 SID/HIII ASTC.001
22	P49031	14HEADCG00SHACYA	Head Accel Y	1000	g	-	Leftward	4-066 SID/HIII ASTC.002
23	P49049	14HEADCG00SHACZA	Head Accel Z	1000	g	-	Upward	4-066 SID/HIII ASTC.003
24	P46517	14HEADCGRDSHACXA	Head Accel X Red	1000	g	-	Rearward	4-066 SID/HIII ASTC.004
25	P49042	14HEADCGRDSHACYA	Head Accel Y Red	1000	g	-	Leftward	4-066 SID/HIII ASTC.005
26	P45017	14HEADCGRDSHACZA	Head Accel Z Red	1000	g	-	Upward	4-066 SID/HIII ASTC.006
27	IF-205-289-FX	14NECKUP00SHFOXA	Neck Force X	8896	N	-	Head forward, chest rearward	4-066 SID/HIII ASTC.007
28	IF-205-289-FY	14NECKUP00SHFOYA	Neck Force Y	8896	N	+	Head leftward, chest rightward	4-066 SID/HIII ASTC.008
29	IF-205-289-FZ	14NECKUP00SHFOZA	Neck Force Z	13344	N	+	Head upward, chest downward	4-066 SID/HIII ASTC.009
30	IF-205-289-MX	14NECKUP00SHMOXA	Neck Moment X	282	N-m	-	Right ear toward right shoulder	4-066 SID/HIII ASTC.010
31	IF-205-289-MY	14NECKUP00SHMOYA	Neck Moment Y	282	N-m	+	Chin toward sternum	4-066 SID/HIII ASTC.011
32	IF-205-289-MZ	14NECKUP00SHMOZA	Neck Moment Z	282	N-m	+	Chin toward left shoulder	4-066 SID/HIII ASTC.012
33	P49041	14RIBSLU00SHACYA	Left Upper Rib Y	800	g	+	Rightward	4-066 SID/HIII ASTC.013

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060320

# Channel Report Test Number 060320

Ref	Transducer ID	ISO Signal Identifier	Description	FScale	Units	DAS		Assembly
						Flip	Positive Polarity	
34	P46516	14RIBSLURESHACYA	Left Upper Rib Red Y	800	g	+	Rightward	4-066 SID/HIII ASTC.014
35	P49044	14RIBSLL00SHACYA	Left Lower Rib Y	800	g	+	Rightward	4-066 SID/HIII ASTC.015
36	P46510	14RIBSLLRESHACYA	Left Lower Rib Red Y	800	g	+	Rightward	4-066 SID/HIII ASTC.016
37	P49035	14SPIN1200SHACYA	Lower Spine Y	400	g	-	Leftward	4-066 SID/HIII ASTC.017
38	P49022	14SPIN12RDSHACYA	Lower Spine Red Y	400	g	-	Leftward	4-066 SID/HIII ASTC.018
39	P46509	14PELVCG00SHACYA	Pelvis Accel Y	400	g	-	Leftward	4-066 SID/HIII ASTC.019
40	P50276	16SILBFR0000ACXA	RIGHT SIDE SILL AT FRONT SEAT (X) ACCELERATION VS TIME (#1)	400	g	+	Forward	
41	P50279	16SILBFR0000ACYA	RIGHT SIDE SILL AT FRONT SEAT (Y) ACCELERATION VS TIME (#1)	1000	g	-	Leftward	
42	P50524	16SILBFR0000ACZA	RIGHT SIDE SILL AT FRONT SEAT (Z) ACCELERATION VS TIME (#1)	400	g	+	Downward	
43	P50294	16SILBRE0000ACXA	RIGHT SIDE SILL AT REAR SEAT (X) ACCELERATION VS TIME (#2)	400	g	+	Forward	
44	P50285	16SILBRE0000ACYA	RIGHT SIDE SILL AT REAR SEAT (Y) ACCELERATION VS TIME (#2)	1000	g	-	Leftward	
45	P50329	16SILBRE0000ACZA	RIGHT SIDE SILL AT REAR SEAT (Z) ACCELERATION VS TIME (#2)	400	g	-	Upward	
46	P50322	18FORA000000ACXA	REAR FLOORPAN ABOVE AXLE (X) ACCELERATION VS TIME (#3)	1000	g	+	Forward	
47	P50318	18FORA000000ACYA	REAR FLOORPAN ABOVE AXLE (Y) ACCELERATION VS TIME (#3)	1000	g	-	Leftward	
48	P50310	18FORA000000ACZA	REAR FLOORPAN ABOVE AXLE (Z) ACCELERATION VS TIME (#3)	1000	g	-	Upward	
49	P42044	14SILBFR0000ACYA	LEFT SIDE SILL AT FRONT SEAT (Y) ACCELERATION VS TIME (#5)	1000	g	+	Rightward	
50	P50290	14SILBRE0000ACYA	LEFT SIDE SILL AT REAR SEAT (Y) ACCELERATION VS TIME	1000	g	+	Rightward	
51	P50289	16VEHCRE0000ACYA	RIGHT REAR OCCUPANT COMPARTMENT (Y) ACCELERATION VS TIME (#7)	1500	g	+	Rightward	
52	P49693	11APILLO0000ACYA	LEFT LOWER A-POST (Y) ACCELERATION VS TIME (#14)	1500	g	-	Leftward	
53	P50439	11APILMI0000ACYA	LEFT MID A-POST (Y) ACCELERATION VS TIME (#15)	1500	g	-	Leftward	
54	P50309	14BPILLO0000ACYA	LEFT LOWER B-POST (Y) ACCELERATION VS TIME (#12)	1500	g	-	Leftward	
55	P50286	14BPILMI0000ACYA	LEFT MID B-POST (Y) ACCELERATION VS TIME (#13)	1500	g	-	Leftward	
56	P49762	11SETTRFR0000ACYA	LEFT FRONT SEAT TRACK (Y) ACCELERATION VS TIME (#16)	1500	g	+	Rightward	
57	P50319	14SETRLERE00ACYA	LEFT REAR SEAT TRACK (Y) ACCELERATION VS TIME	1500	g	+	Rightward	
58	P50277	10VEHCCG0000ACXA	VEHICLE CENTER OF GRAVITY (X) ACCELERATION VS TIME (#18)	1000	g	+	Forward	
59	P50323	10VEHCCG0000ACYA	VEHICLE CENTER OF GRAVITY (Y) ACCELERATION VS TIME (#18)	1000	g	-	Leftward	
60	P50327	10VEHCCG0000ACZA	VEHICLE CENTER OF GRAVITY (Z) ACCELERATION VS TIME (#18)	1000	g	-	Upward	

# Channel Report Test Number 060320

Ref	Transducer ID	ISO Signal Identifier	Description	FScale	Units	DAS Flip	Positive Polarity
1	P50326	M0VEHCCG0000ACXA	MDB CENTER OF GRAVITY (X) ACCELERATION VS TIME (#1)	600	g	+	Forward
2	P50282	M0VEHCCG0000ACYA	MDB CENTER OF GRAVITY (Y) ACCELERATION VS TIME(#1)	600	g	-	Leftward
3	P50325	M0VEHCCG0000ACZA	MDB CENTER OF GRAVITY (Z) ACCELERATION VS TIME(#1)	600	g	-	Upward
4	P40748	M7FRAM000000ACXA	MDB REAR (X) ACCELERATION VS TIME (#2)	600	g	+	Forward
5	P49733	M7FRAM000000ACYA	MDB REAR (Y) ACCELERATION VS TIME (#2)	600	g	-	Leftward
6	Bit.00	M3CONT000000VO00	MDB RIGHT CONTACT SWITCH	1	Logic	+	Bipolar
7	Bit.01	M1CONT000000VO00	MDB LEFT CONTACT SWITCH	1	Logic	+	Bipolar

# Command File Test Number 060320

Channel

Number	ISO Mnemonic	Channel Title	Filter Class	Flip	Zero	Full Scale
1	11HEADCG00SHACXA	DRIVER HEAD X-AXIS ACCELERATION	1000	+	yes	1000
2	11HEADCG00SHACYA	DRIVER HEAD Y-AXIS ACCELERATION	1000	+	yes	1000
3	11HEADCG00SHACZA	DRIVER HEAD Z-AXIS ACCELERATION	1000	+	yes	1000
3A	11HEADCG00SHACRA	DRIVER HEAD RESULTANT ACCELERATION	1000			
4	11HEADCGRDSHACXA	DRIVER HEAD REDUNDANT X-AXIS ACCELERATION	1000	+	yes	1000
5	11HEADCGRDSHACYA	DRIVER HEAD REDUNDANT Y-AXIS ACCELERATION	1000	+	yes	1000
6	11HEADCGRDSHACZA	DRIVER HEAD REDUNDANT Z-AXIS ACCELERATION	1000	+	yes	1000
6A	11HEADCGRDSHACRA	DRIVER HEAD REDUNDANT RESULTANT ACCELERATION	1000			
7	11NECKUP00SHFOXA	DRIVER NECK X-AXIS FORCE	1000	+	yes	8896
8	11NECKUP00SHFOYA	DRIVER NECK Y-AXIS FORCE	1000	+	yes	8896
9	11NECKUP00SHFOZA	DRIVER NECK Z-AXIS FORCE	1000	+	yes	13344
10	11NECKUP00SHMOXA	DRIVER NECK MOMENT ABOUT X AXIS	600	+	yes	282
11	11NECKUP00SHMOYA	DRIVER NECK MOMENT ABOUT Y AXIS	600	+	yes	282
12	11NECKUP00SHMOZA	DRIVER NECK MOMENT ABOUT Z AXIS	600	+	yes	282
13	11RIBSLU00SHACYA	DRIVER UPPER RIB (Y) ACCELERATION VS TIME	1000	+	yes	800
13A	11RIBSLU00SHVEYA	DRIVER UPPER RIB (Y) VELOCITY VS TIME	180			
14	11RIBSLL00SHACYA	DRIVER LOWER RIB (Y) ACCELERATION VS TIME	1000	+	yes	800
14A	11RIBSLL00SHVEYA	DRIVER LOWER RIB (Y) VELOCITY VS TIME	180			
15	11SPIN1200SHACYA	DRIVER LOWER SPINE (Y) ACCELERATION VS TIME	1000	+	yes	400
15A	11SPIN1200SHVEYA	DRIVER LOWER SPINE (Y) VELOCITY VS TIME	180			
16	11PELVCG00SHACYA	DRIVER PELVIC (Y) ACCELERATION VS TIME	1000	+	yes	400
16A	11PELVCG00SHVEYA	DRIVER PELVIC (Y) VELOCITY VS TIME	180			
17	11RIBSLURESHACYA	DRIVER UPPER RIB (Y) ACCELERATION VS TIME REDUNDANT	1000	+	yes	800
17A	11RIBSLURESHVEYA	DRIVER UPPER RIB (Y) VELOCITY VS TIME REDUNDANT	180			
18	11RIBSLLRESHACYA	DRIVER LOWER RIB (Y) ACCELERATION VS TIME REDUNDANT	1000	+	yes	800
18A	11RIBSLLRESHVEYA	DRIVER LOWER RIB (Y) VELOCITY VS TIME REDUNDANT	180			
19	11SPIN12RDASHACYA	DRIVER LOWER SPINE (Y) ACCELERATION VS TIME REDUNDANT	1000	+	yes	400
19A	11SPIN12RDASHVEYA	DRIVER LOWER SPINE (Y) VELOCITY VS TIME REDUNDANT	180			
20	14HEADCG00SHACXA	LEFT REAR PASSENGER HEAD X-AXIS ACCELERATION	1000	+	yes	1000
21	14HEADCG00SHACYA	LEFT REAR PASSENGER HEAD Y-AXIS ACCELERATION	1000	+	yes	1000
22	14HEADCG00SHACZA	LEFT REAR PASSENGER HEAD Z-AXIS ACCELERATION	1000	+	yes	1000
22A	14HEADCG00SHACRA	LEFT REAR PASSENGER HEAD RESULTANT ACCELERATION	1000			
23	14HEADCGRDSHACXA	LEFT REAR PASSENGER HEAD REDUNDANT X-AXIS ACCELERATION	1000	+	yes	1000
24	14HEADCGRDSHACYA	LEFT REAR PASSENGER HEAD REDUNDANT Y-AXIS ACCELERATION	1000	+	yes	1000
25	14HEADCGRDSHACZA	LEFT REAR PASSENGER HEAD REDUNDANT Z-AXIS ACCELERATION	1000	+	yes	1000

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060320

# Command File Test Number 060320

Channel

Number	ISO Mnemonic	Channel Title	Filter Class	Flip	Zero	Full Scale
25A	14HEADCGRDSHACRA	LEFT REAR PASSENGER HEAD REDUNDANT RESULTANT ACCELERATION	1000			
26	14NECKUP00SHFOXA	LEFT REAR PASSENGER NECK X-AXIS FORCE	1000	+	yes	8896
27	14NECKUP00SHFOYA	LEFT REAR PASSENGER NECK Y-AXIS FORCE	1000	+	yes	8896
28	14NECKUP00SHFOZA	LEFT REAR PASSENGER NECK Z-AXIS FORCE	1000	+	yes	13344
29	14NECKUP00SHMOXA	LEFT REAR PASSENGER NECK MOMENT ABOUT X AXIS	600	+	yes	282
30	14NECKUP00SHMOYA	LEFT REAR PASSENGER NECK MOMENT ABOUT Y AXIS	600	+	yes	282
31	14NECKUP00SHMOZA	LEFT REAR PASSENGER NECK MOMENT ABOUT Z AXIS	600	+	yes	282
32	14RIBSLU00SHACYA	LEFT REAR PASSENGER UPPER RIB (Y) ACCELERATION VS TIME	1000	+	yes	800
32A	14RIBSLU00SHVEYA	LEFT REAR PASSENGER UPPER RIB (Y) VELOCITY VS TIME	180			
33	14RIBSLL00SHACYA	LEFT REAR PASSENGER LOWER RIB (Y) ACCELERATION VS TIME	1000	+	yes	800
33A	14RIBSLL00SHVEYA	LEFT REAR PASSENGER LOWER RIB (Y) VELOCITY VS TIME	180			
34	14SPIN1200SHACYA	LEFT REAR PASSENGER LOWER SPINE (Y) ACCELERATION VS TIME	1000	+	yes	400
34A	14SPIN1200SHVEYA	LEFT REAR PASSENGER LOWER SPINE (Y) VELOCITY VS TIME	180			
35	14PELVCG00SHACYA	LEFT REAR PASSENGER PELVIC (Y) ACCELERATION VS TIME	1000	+	yes	400
35A	14PELVCG00SHVEYA	LEFT REAR PASSENGER PELVIC (Y) VELOCITY VS TIME	180			
36	14RIBSLURESHACYA	LEFT REAR PASSENGER UPPER RIB (Y) ACCELERATION VS TIME REDUNDANT	1000	+	yes	800
36A	14RIBSLURESHVEYA	LEFT REAR PASSENGER UPPER RIB (Y) VELOCITY VS TIME REDUNDANT	180			
37	14RIBSLLRESHACYA	LEFT REAR PASSENGER LOWER RIB (Y) ACCELERATION VS TIME REDUNDANT	1000	+	yes	800
37A	14RIBSLLRESHVEYA	LEFT REAR PASSENGER LOWER RIB (Y) VELOCITY VS TIME REDUNDANT	180			
38	14SPIN12RDSHACYA	LEFT REAR PASSENGER LOWER SPINE (Y) ACCELERATION VS TIME REDUNDANT	1000	+	yes	400
38A	14SPIN12RDSHVEYA	LEFT REAR PASSENGER LOWER SPINE (Y) VELOCITY VS TIME REDUNDANT	180			
39	16SILBFR0000ACXA	RIGHT SIDE SILL AT FRONT SEAT (X) ACCELERATION VS TIME (#1)	60	+	yes	400
39A	16SILBFR0000VEXA	RIGHT SIDE SILL AT FRONT SEAT (X) VELOCITY VS TIME (#1)	180			
40	16SILBFR0000ACYA	RIGHT SIDE SILL AT FRONT SEAT (Y) ACCELERATION VS TIME (#1)	60	+	yes	1000
40A	16SILBFR0000VEYA	RIGHT SIDE SILL AT FRONT SEAT (Y) VELOCITY VS TIME (#1)	180			
41	16SILBFR0000ACZA	RIGHT SIDE SILL AT FRONT SEAT (Z) ACCELERATION VS TIME (#1)	60	+	yes	400
41A	16SILBFR0000VEZA	RIGHT SIDE SILL AT FRONT SEAT (Z) VELOCITY VS TIME (#1)	180			
41B	16SILBFR0000ACRA	RIGHT SIDE SILL AT FRONT SEAT RESULTANT ACCELERATION VS TIME (#1)	60			
42	16SILBRE0000ACXA	RIGHT SIDE SILL AT REAR SEAT (X) ACCELERATION VS TIME (#2)	60	+	yes	400
42A	16SILBRE0000VEXA	RIGHT SIDE SILL AT REAR SEAT (X) VELOCITY VS TIME (#2)	180			
43	16SILBRE0000ACYA	RIGHT SIDE SILL AT REAR SEAT (Y) ACCELERATION VS TIME (#2)	60	+	yes	1000
43A	16SILBRE0000VEYA	RIGHT SIDE SILL AT REAR SEAT (Y) VELOCITY VS TIME (#2)	180			
44	16SILBRE0000ACZA	RIGHT SIDE SILL AT REAR SEAT (Z) ACCELERATION VS TIME (#2)	60	+	yes	400
44A	16SILBRE0000VEZA	RIGHT SIDE SILL AT REAR SEAT (Z) VELOCITY VS TIME (#2)	180			
44B	16SILBRE0000ACRA	RIGHT SIDE SILL AT REAR SEAT RESULTANT ACCELERATION VS TIME (#2)	60			

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060320

# Command File Test Number 060320

Channel

Number	ISO Mnemonic	Channel Title	Filter Class	Flip	Zero	Full Scale
45	18FORA000000ACXA	REAR FLOORPAN ABOVE AXLE (X) ACCELERATION VS TIME (#3)	60	+	yes	1000
45A	18FORA000000VEXA	REAR FLOORPAN ABOVE AXLE (X) VELOCITY VS TIME (#3)	180			
46	18FORA000000ACYA	REAR FLOORPAN ABOVE AXLE (Y) ACCELERATION VS TIME (#3)	60	+	yes	1000
46A	18FORA000000VEYA	REAR FLOORPAN ABOVE AXLE (Y) VELOCITY VS TIME (#3)	180			
47	18FORA000000ACZA	REAR FLOORPAN ABOVE AXLE (Z) ACCELERATION VS TIME (#3)	60	+	yes	1000
47A	18FORA000000VEZA	REAR FLOORPAN ABOVE AXLE (Z) VELOCITY VS TIME (#3)	180			
47B	18FORA000000ACRA	REAR FLOORPAN ABOVE AXLE RESULTANT ACCELERATION VS TIME (#3)	60			
48	14SILBFR0000ACYA	LEFT SIDE SILL AT FRONT SEAT (Y) ACCELERATION VS TIME (#5)	60	+	yes	1000
48A	14SILBFR0000VEYA	LEFT SIDE SILL AT FRONT SEAT (Y) VELOCITY VS TIME (#5)	180			
48B	14SILBFR0000DCYA	LEFT SIDE SILL AT FRONT SEAT (Y) DISPLACEMENT VS TIME (#5)	180			
49	14SILBRE0000ACYA	LEFT SIDE SILL AT REAR SEAT (Y) ACCELERATION VS TIME	60	+	yes	1000
49A	14SILBRE0000VEYA	LEFT SIDE SILL AT REAR SEAT (Y) VELOCITY VS TIME	180			
49B	14SILBRE0000DCYA	LEFT SIDE SILL AT REAR SEAT (Y) DISPLACEMENT VS TIME	180			
50	16VEHCRE0000ACYA	RIGHT REAR OCCUPANT COMPARTMENT (Y) ACCELERATION VS TIME (#7)	60	+	yes	1500
50A	16VEHCRE0000VEYA	RIGHT REAR OCCUPANT COMPARTMENT (Y) VELOCITY VS TIME (#7)	180			
50B	16VEHCRE0000DCYA	RIGHT REAR OCCUPANT COMPARTMENT (Y) DISPLACEMENT VS TIME (#7)	180			
51	11APILLO0000ACYA	LEFT LOWER A-POST (Y) ACCELERATION VS TIME (#14)	60	+	yes	1500
51A	11APILLO0000VEYA	LEFT LOWER A-POST (Y) VELOCITY VS TIME (#14)	180			
52	11APILMI0000ACYA	LEFT MID A-POST (Y) ACCELERATION VS TIME (#15)	60	+	yes	1500
52A	11APILMI0000VEYA	LEFT MID A-POST (Y) VELOCITY VS TIME (#15)	180			
53	14BPILLO0000ACYA	LEFT LOWER B-POST (Y) ACCELERATION VS TIME (#12)	60	+	yes	1500
53A	14BPILLO0000VEYA	LEFT LOWER B-POST (Y) VELOCITY VS TIME (#12)	180			
54	14BPILMI0000ACYA	LEFT MID B-POST (Y) ACCELERATION VS TIME (#13)	60	+	yes	1500
54A	14BPILMI0000VEYA	LEFT MID B-POST (Y) VELOCITY VS TIME (#13)	180			
55	11SETRFR0000ACYA	LEFT FRONT SEAT TRACK (Y) ACCELERATION VS TIME (#16)	60	+	yes	1500
55A	11SETRFR0000VEYA	LEFT FRONT SEAT TRACK (Y) VELOCITY VS TIME (#16)	180			
56	14SETRLERE00ACYA	LEFT REAR SEAT TRACK (Y) ACCELERATION VS TIME	60	+	yes	1500
56A	14SETRLERE00VEYA	LEFT REAR SEAT TRACK (Y) VELOCITY VS TIME	180			
57	10VEHCCG0000ACXA	VEHICLE CENTER OF GRAVITY (X) ACCELERATION VS TIME (#18)	60	+	yes	1000
57A	10VEHCCG0000VEXA	VEHICLE CENTER OF GRAVITY (X) VELOCITY VS TIME (#18)	180			
58	10VEHCCG0000ACYA	VEHICLE CENTER OF GRAVITY (Y) ACCELERATION VS TIME (#18)	60	+	yes	1000
58A	10VEHCCG0000VEYA	VEHICLE CENTER OF GRAVITY (Y) VELOCITY VS TIME (#18)	180			
59	10VEHCCG0000ACZA	VEHICLE CENTER OF GRAVITY (Z) ACCELERATION VS TIME (#18)	60	+	yes	1000
59A	10VEHCCG0000VEZA	VEHICLE CENTER OF GRAVITY (Z) VELOCITY VS TIME (#18)	180			
59B	10VEHCCG0000ACRA	VEHICLE CENTER OF GRAVITY RESULTANT ACCELERATION VS TIME (#18)	60			

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060320

# Command File Test Number 060320

Channel

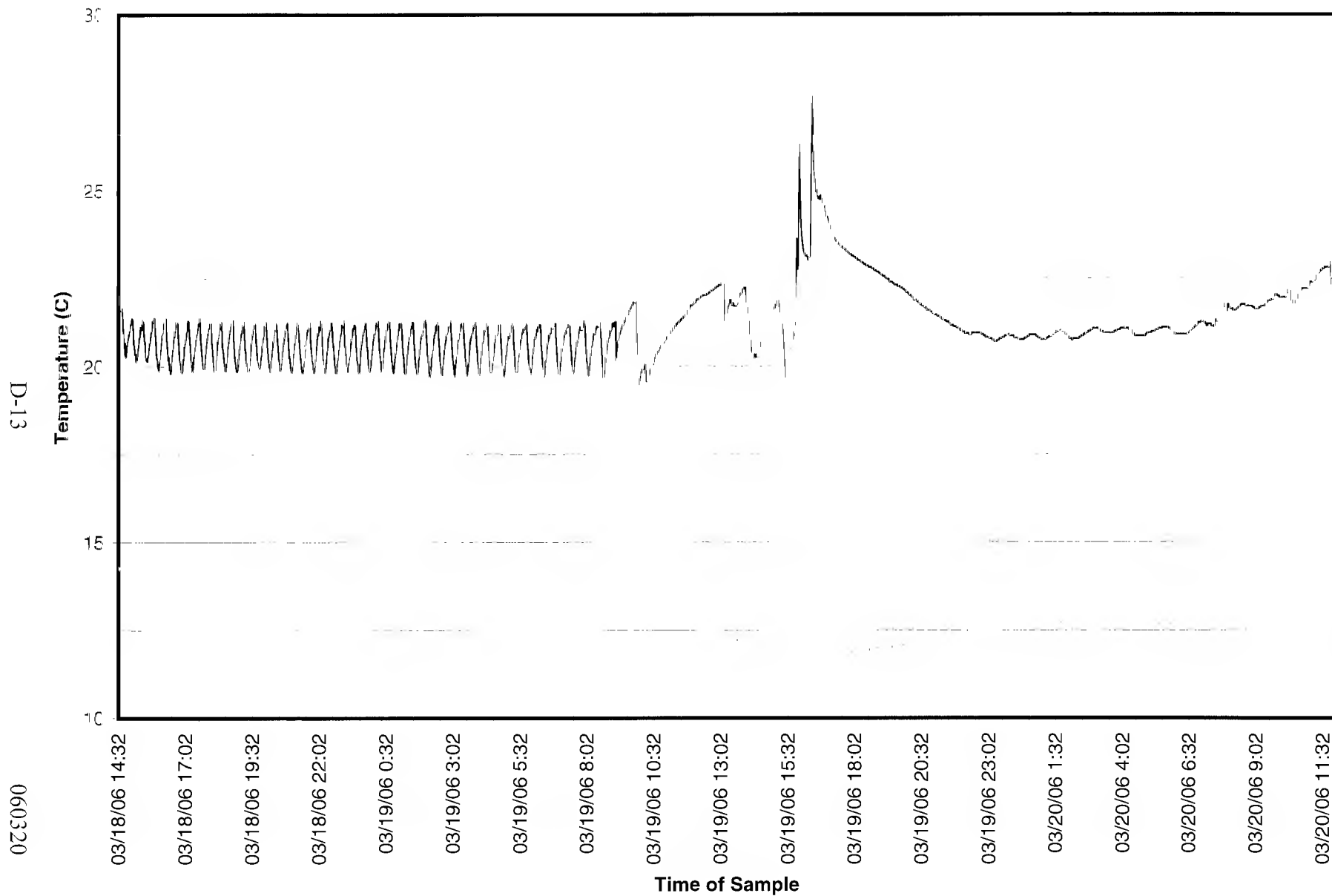
Number	ISO Mnemonic	Channel Title	Filter Class	Flip	Zero	Full Scale
60	M0VEHCCG0000ACXA	MDB CENTER OF GRAVITY (X) ACCELERATION VS TIME (#1)	60	+	yes	600
60A	M0VEHCCG0000VEXA	MDB CENTER OF GRAVITY (X) VELOCITY VS TIME (#1)	180			
61	M0VEHCCG0000ACYA	MDB CENTER OF GRAVITY (Y) ACCELERATION VS TIME(#1)	60	+	yes	600
61A	M0VEHCCG0000VEYA	MDB CENTER OF GRAVITY (Y) VELOCITY VS TIME(#1)	180			
62	M0VEHCCG0000ACZA	MDB CENTER OF GRAVITY (Z) ACCELERATION VS TIME(#1)	60	+	yes	600
62A	M0VEHCCG0000VEZA	MDB CENTER OF GRAVITY (Z) VELOCITY VS TIME(#1)	180			
62B	M0VEHCCG0000ACRA	MDB CENTER OF GRAVITY RESULTANT ACCELERATION VS TIME(#1)	60			
63	M7FRAM000000ACXA	MDB REAR (X) ACCELERATION VS TIME (#2)	60	+	yes	600
63A	M7FRAM000000VEXA	MDB REAR (X) VELOCITY VS TIME (#2)	180			
64	M7FRAM000000ACYA	MDB REAR (Y) ACCELERATION VS TIME (#2)	60	+	yes	600
64A	M7FRAM000000VEYA	MDB REAR (Y) VELOCITY VS TIME (#2)	180			
65	M3CONT000000VO00	MDB RIGHT CONTACT SWITCH	1000	+	no	1
66	M1CONT000000VO00	MDB LEFT CONTACT SWITCH	1000	+	no	1
67	11RIBSLU00SHACYA	DRIVER UPPER RIB (Y) ACCELERATION VS TIME	100	+	yes	800
68	11RIBSLL00SHACYA	DRIVER LOWER RIB (Y) ACCELERATION VS TIME	100	+	yes	800
69	11SPIN1200SHACYA	DRIVER LOWER SPINE (Y) ACCELERATION VS TIME	100	+	yes	400
70	11PELVCG00SHACYA	DRIVER PELVIC (Y) ACCELERATION VS TIME	100	+	yes	400
71	11RIBSLURESHACYA	DRIVER UPPER RIB (Y) ACCELERATION VS TIME REDUNDANT	100	+	yes	800
72	11RIBSLLRESHACYA	DRIVER LOWER RIB (Y) ACCELERATION VS TIME REDUNDANT	100	+	yes	800
73	11SPIN12RDSHACYA	DRIVER LOWER SPINE (Y) ACCELERATION VS TIME REDUNDANT	100	+	yes	400
74	14RIBSLU00SHACYA	LEFT REAR PASSENGER UPPER RIB (Y) ACCELERATION VS TIME	100	+	yes	800
75	14RIBSLL00SHACYA	LEFT REAR PASSENGER LOWER RIB (Y) ACCELERATION VS TIME	100	+	yes	800
76	14SPIN1200SHACYA	LEFT REAR PASSENGER LOWER SPINE (Y) ACCELERATION VS TIME	100	+	yes	400
77	14PELVCG00SHACYA	LEFT REAR PASSENGER PELVIC (Y) ACCELERATION VS TIME	100	+	yes	400
78	14RIBSLURESHACYA	LEFT REAR PASSENGER UPPER RIB (Y) ACCELERATION VS TIME REDUNDANT	100	+	yes	800
79	14RIBSLLRESHACYA	LEFT REAR PASSENGER LOWER RIB (Y) ACCELERATION VS TIME REDUNDANT	100	+	yes	800
80	14SPIN12RDSHACYA	LEFT REAR PASSENGER LOWER SPINE (Y) ACCELERATION VS TIME REDUNDANT	100	+	yes	400

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060320



56/28 KPH 90 DEGREE SIDE IMPACT (MDB) INTO LEFT SIDE OF 2006 CHEVROLET HHR





# CHEVROLET

## 2006 CHEVROLET HHR LT SEDAN

### Standard Equipment

Items Featured Below are included at NO EXTRA CHARGE in the Standard Vehicle Shown at Right

#### \*\*\*MECHANICAL\*\*\*

- 2.2L DOHC 4CYL ENGINE
- GETRAG 5 SPEED MANUAL TRANS
- SPEED SENSITIVE STEERING
- TOURING SUSPENSION

#### \*\*\*SAFETY & SECURITY\*\*\*

- BRAKES, PWR FRT DISC/RR DRUM
- DRIVER AND FRONT PASS DUAL STAGE AIRBAGS
- PASSKEY III+ THEFT DETERRENT
- BATTERY RUNDOWN PROTECTION
- LATCH SYSTEM FOR CHILD SEATS
- DAYTIME RUNNING LAMPS & AUTO EXTERIOR LAMP CONTROL
- CHILD SECURITY RR DOOR LOCKS
- FRT HEIGHT ADJ SAFETY BELTS

#### \*\*\*EXTERIOR\*\*\*

- 16" ALUMINUM WHEELS
- P215/55R16 ALL SEASON TIRES
- SATIN CHROME APPEARANCE PKG
- DUAL BREAKAWAY POWER MIRRORS

- INTERMITTENT FRONT WIPERS
- REAR WIPER
- INTERIOR
- A/C W/AIR FILTRATION SYSTEM
- AM/FM STEREO W/CD MP3 PLAYBACK & AUX INPUT JACK
- RECLINING FRONT SEAT CUPHOLDER SEATS
- POWER DRVR SEAT WITH LUMBAR
- 60/40 SPLIT FOLDING REAR SEAT
- FOLD FLAT FRONT PASS SEAT
- FLR CONSOLE WITH FRONT & REAR CUPHOLDERS & DUAL PWR OUTLETS
- TACH & DRIVER INFO CENTER
- TILT STEERING WHEEL
- REAR WINDOW DEFROSTER
- POWER WINDOWS & LOCKS WITH REMOTE KEYLESS ENTRY
- CRUISE CONTROL
- FLOOR MATS FRONT REAR & CARGO
- AUXILIARY GLOVE BOX

### Options & Pricing

MANUFACTURER'S SUGGESTED RETAIL PRICE

STANDARD VEHICLE PRICE \$16,425.00

Options installed by the Manufacturer (may replace standard equipment shown at left)

FRONT LICENSE PLATE MOUNT INC.  
• EXT-DAYTONA BLUE METALLIC INC.  
• INT-GRAY CLOTH INC.

TOTAL OPTIONS \$0.00

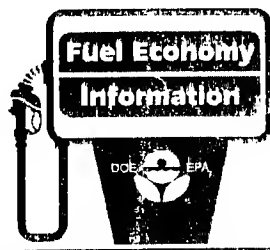
Visit us at [www.chevy.com](http://www.chevy.com)

CITY MPG

22

HIGHWAY MPG

30



#### ACTUAL MILEAGE

WILL VARY WITH OPTIONS, DRIVING CONDITIONS, DRIVING HABITS AND VEHICLE'S CONDITION. RESULTS REPORTED TO EPA INDICATE THAT THE MAJORITY OF VEHICLES WITH THESE ESTIMATES WILL ACHIEVE BETWEEN

18 AND 26 MPG IN THE CITY  
AND BETWEEN  
25 AND 35 MPG ON THE  
HIGHWAY.

2006 HHR FWD  
2.2 LITER I4 ENGINE  
FUEL INJECTION, MANUAL  
5 SPEED TRANSMISSION  
CATALYST, FEEDBACK FUEL SYSTEM

ESTIMATED ANNUAL FUEL COST: \$1,320

FOR COMPARISON SHOPPING,  
ALL VEHICLES CLASSIFIED AS

#### SPECIAL PURPOSE

HAVE BEEN ISSUED  
MILEAGE RATINGS  
RANGING FROM

11 TO 36 MPG CITY  
AND  
14 TO 31 MPG  
HIGHWAY

TDM

TOTAL VEHICLE & OPTIONS \$16,425.00  
DESTINATION CHARGE \$55.00  
TOTAL VEHICLE PRICE \$16,480.00

JEFF WYLER CHEVROLET  
1501 HILLCREST AVE  
NGF 45 71

DEALER NO 08392  
FINAL ASSEMBLY PLANT: ARIZTE, ST. MEXICO  
VIN: 2GNDK23F96S580275

GMLBL\_PROD\_0007 © 2004 General Motors Corporation  
Last Change: 05/08/2005

2CC0527697

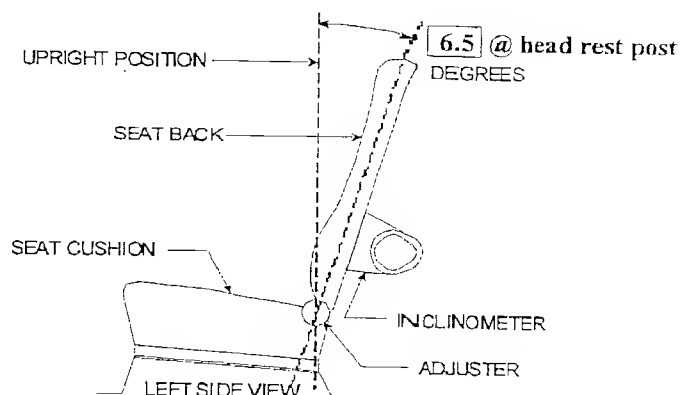
## TEST VEHICLE INFORMATION

Vehicle Model Year and Make: 2006 ChevroletVehicle Model and Body Style: HHR

1. NOMINAL DESIGN RIDING POSITION –  
For adjustable driver and passenger seat backs, describe how to position the inclinometer to measure the seat back angle. Include description of the location of the adjustment latch detent if applicable.

Seat back angle for driver's seat = 6.5°.

Measurement Instructions:

Place the inclinometer at the head rest post to achieve 6.5 degreeSeat back angle for passenger's seat = 6.5°.

Measurement Instructions:

Place the inclinometer at the head rest post to achieve 6.5 degree

2. SEAT FORE AND AFT POSITIONS –

Provide instructions for positioning the driver and front outboard passenger seat(s) in the center of fore and aft travel. For example, provide information to locate the detent in which the seat track is to be locked.

Position of the driver's seat:

Mark the forward most and rearward most positions of the seat. The length between the forward and rearward marks should be 280 mm. Position the seat 140 mm rearward of the forward most mark

Position of the passenger's seat (if applicable):

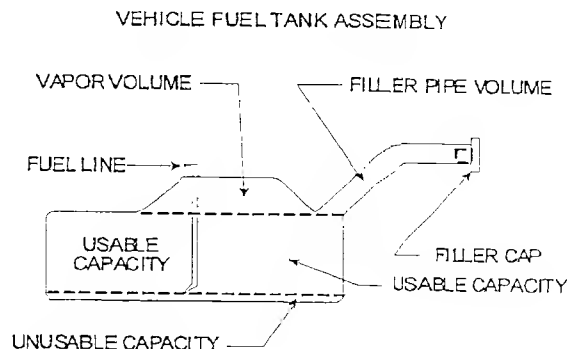
The length between the forward and rearward marks should be 240 mm. Position the seat 120 mm rearward of the forward most mark (8<sup>th</sup> detent from forward most position, total number of detent is 16)

3. FUEL TANK CAPACITY DATA –

- 3.1 A. "Usable Capacity" of standard equipment fuel tank = 16.2 gallons (61 L).

B. "Usable Capacity" of optional equipment fuel tank = N/A gallons.C. Capacity used when certification testing to requirements of FMVSS 301 = 16.2 gallons.

Operational Instructions on Fuel Pump:

On when engine is running;On when ignition key is at "on" position;On for approximately 10 seconds when key at "accessory" mode; Drain at filler neck

3.2 Amount of Stoddard solvent added to vehicle for certification test = 15.3 gallons.

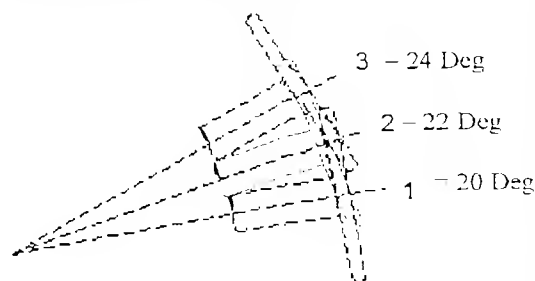
3.3 Is vehicle equipped with electric fuel pump? X YES        NO

If YES, does pump normally operate when vehicle's electrical system is activated?  
X YES        NO

#### 4. STEERING COLUMN ADJUSTMENTS -

#### STEERING COLUMN ASSEMBLY

Steering wheel and column adjustments are made so that the steering wheel hub is at the geometric center of the locus it describes when it is moved through its full range of driving positions.



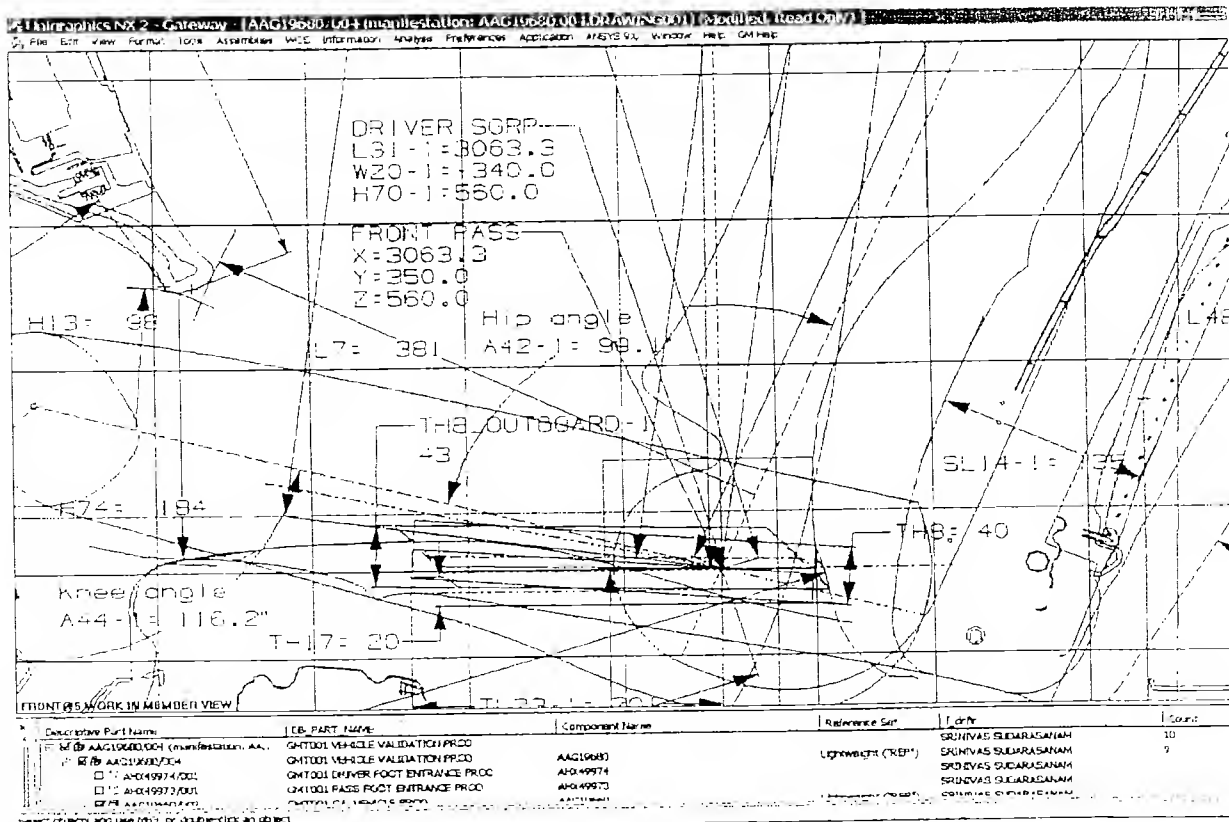
If the tested vehicle has any of these adjustments, does your company use any specific procedures to determine the geometric center.

LEFT SIDE VIEW

Operational Instructions:

Manual rake steering column with steering wheel angle at upper most locking position = 24 degree, lower most locking position = 20 degree. Position the steering wheel angle at 22 degree to achieve the geometric center of the locus of the steering wheel.

#### 5. SEATING REFERENCE POINT (SRP) -



3.2 Amount of Stoddard solvent added to vehicle for certification test = 15.3 gallons

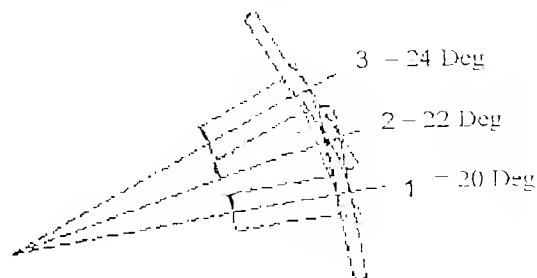
3.3 Is vehicle equipped with electric fuel pump? X YES        NO

If YES, does pump normally operate when vehicle's electrical system is activated?  
X YES        NO

#### 4. STEERING COLUMN ADJUSTMENTS -

#### STEERING COLUMN ASSEMBLY

Steering wheel and column adjustments are made so that the steering wheel hub is at the geometric center of the locus it describes when it is moved through its full range of driving positions.



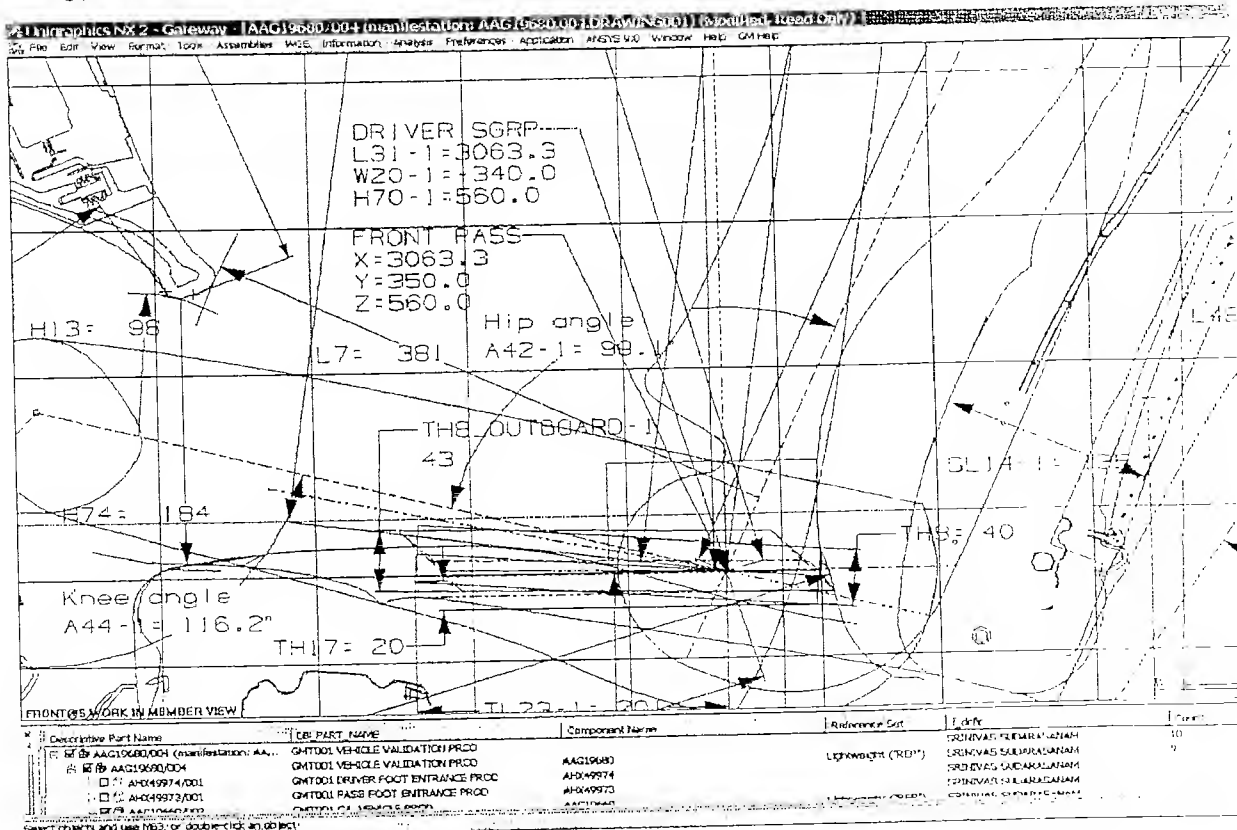
If the tested vehicle has any of these adjustments, does your company use any specific procedures to determine the geometric center.

LEFT SIDE VIEW

Operational Instructions:

Manual rake steering column with steering wheel angle at upper most locking position = 24 degree, lower most locking position = 20 degree. Position the steering wheel angle at 22 degree to achieve the geometric center of the locus of the steering wheel.

#### 5. SEATING REFERENCE POINT (SRP) -





# CERTIFICATE OF CONFORMITY

Certificate No. **24543**  
Serial No. **FG 316**

Cellbond Composites Ltd  
5 Stukeley Business Centre  
Blackstone Road  
Huntingdon  
Cambridgeshire  
PE29 6EF  
United Kingdom

Product Description **FMVSS 214 - 1750x740x550mm Spec with 1.6  
3/8 5052 Painted Grey**

Cellbond Part No. **70NHTSASIUS G**

	Test Results	GR No.	Blk No.
1	35635-42	P202894-A00	N/A
2	35365-72	CHC05033FE	N/A

telephone  
+44 (0) 1480 435302  
telefax  
+44 (0) 1480 450181  
email  
sales@cellbond.com  
website  
www.cellbond.com

## Declaration.

The above moving deformable barrier has been manufactured in accordance with the provisions of FMVSS 214.

## Additional Information...

company registration  
England 1944904

registered office  
5 Stukeley Business Centre  
Blackstone Road  
Huntingdon  
Cambridgeshire  
PE29 6EF

Cellbond Offices  
United Kingdom  
United States of America





NHTSA / IIHS DEFORMABLE SIDE IMPACT BARRIER  
ALUMINIUM HONEYCOMB CERTIFICATION  
STATIC TEST RESULTS

MAIN BLOCK  
Core: 1.6 3/8 5052

Required Crush Strength  
42.5 PSI to 47.5 PSI

Test No: 35635-42

GR No: P202894-A00  
Block No: N/A

	Crush Strength (PSI)			RESULT
	0.25 to 0.38 inch	0.38 to 0.52 inch	0.52 to 0.65 inch	
Sample 1	46.185	46.676	46.068	PASS
Sample 2	45.604	45.538	44.812	PASS
Sample 3	45.749	46.187	45.847	PASS
Sample 4	45.094	45.403	44.389	PASS
Sample 5	43.915	44.532	44.787	PASS
Sample 6	43.655	44.574	44.702	PASS
Sample 7	42.546	43.229	43.950	PASS
Sample 8	44.687	44.336	44.494	PASS

Seven out of the eight samples must fulfil the crush strength  
requirement in order to pass the block certification

\*Sample size and location as per P94.

RESULT: PASSED

# NHTSA / IIHS DEFORMABLE SIDE IMPACT BARRIER MAIN BLOCK

Honeycomb Type: 1.6 3/8 5052

Higher Acceptable Crush Strength Limit: 47.5 PSI

Lower Acceptable Crush Strength Limit: 42.5 PSI

Section 1: 0.25 - 0.38 inch

Section 2: 0.38 - 0.52 inch

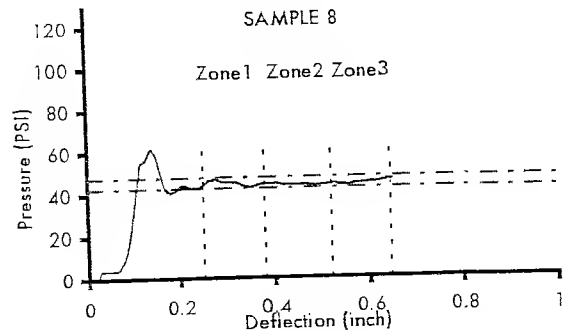
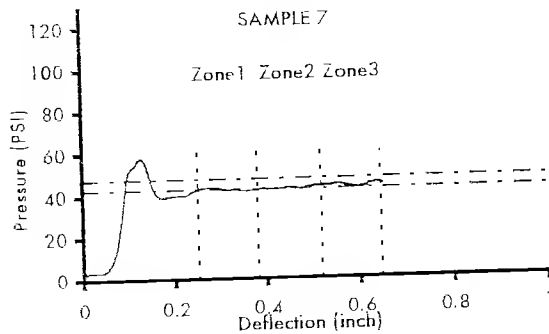
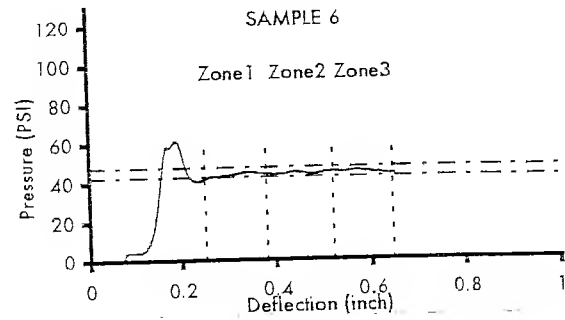
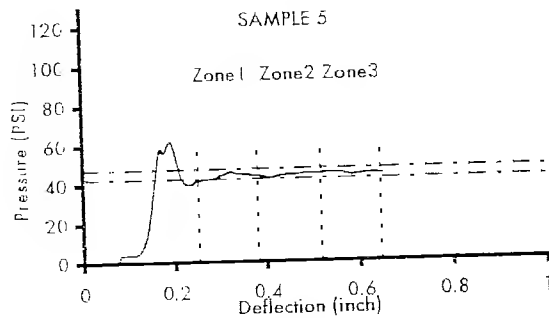
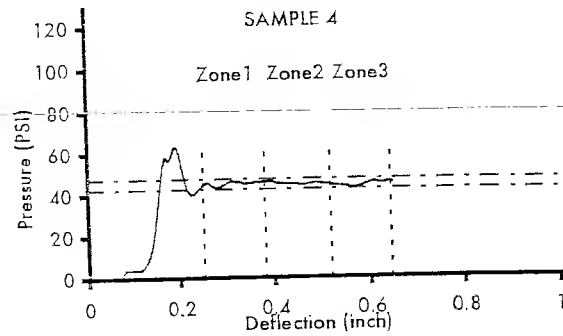
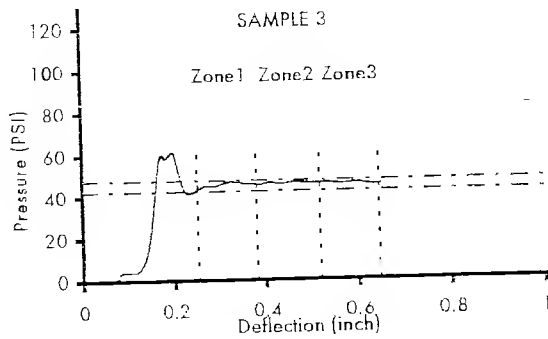
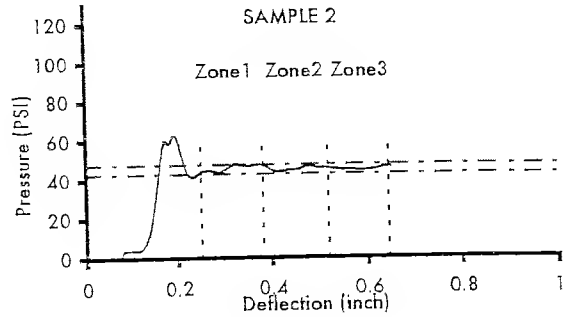
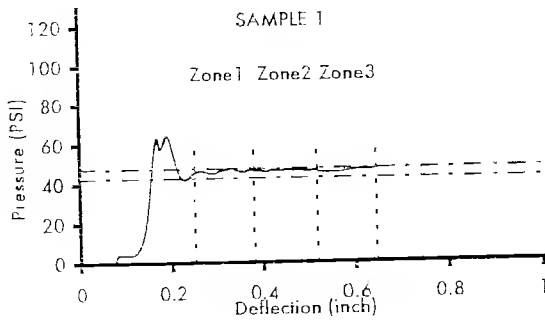
Section 3: 0.52 - 0.65 inch

Speed: 0.25 inch/min

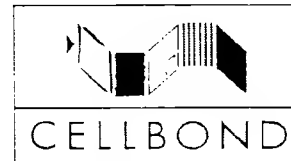
Test No: 35635-42

GR No: P202894-A00

Block No: N/A







NHTSA / IIHS DEFORMABLE SIDE IMPACT BARRIER  
ALUMINIUM HONEYCOMB CERTIFICATION  
STATIC TEST RESULTS

BUMPER  
Core: 5.2 1/4 3003

Required Crush Strength  
230 PSI to 260 PSI

Test No: 35365-72

GR No: CHC05033FE

Block No: N/A

	Crush Strength (PSI)			RESULT
	0.25 to 0.38	0.38 to 0.52	0.52 to 0.65	
Sample* 1	241.45	242.74	239.89	PASS
Sample 2	238.62	238.46	235.59	PASS
Sample 3	234.92	236.24	235.59	PASS
Sample 4	246.69	243.64	240.27	PASS
Sample 5	238.83	243.41	239.03	PASS
Sample 6	242.80	240.75	237.24	PASS
Sample 7	235.97	236.01	235.09	PASS
Sample 8	234.73	235.35	233.37	PASS

Seven out of the eight samples must fulfil the crush strength  
requirement in order to pass the block certification

\*Sample size and location as per R94

RESULT: PASSED

# NHTSA / IIHS DEFORMABLE SIDE IMPACT BARRIER BUMPER

Honeycomb Type: 5.2 1/4 3003  
Higher Acceptable Crush Strength Limit: 260 PSI  
Lower Acceptable Crush Strength Limit: 230 PSI

Section 1: 0.25 - 0.38 inch  
Section 2: 0.38 - 0.52 inch  
Section 3: 0.52 - 0.65 inch  
Speed: 0.25 inch/min

Test No: 35365-72

GR No: CHC05033FE

Block No: N/A

